Pedernales Electric Cooperative

Underground Installation Specifications

June 9, 2025

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REV	K	DATE	6/9/2025	REVISION	REVISED 560-050, 051, & 052 TITLES	BY	SSS	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

INDEX

drawn:	approved:	date:	500-000
SSS	MMG	6/9/2025	

MEMBER/DEVELOPER CONTRIBUTION:

1. Payment to PEC for materials per the Line Extension Policy.
2. Trench.
3. Conduit (See Specification 510-009, *Typical Trench, Pad, & Meter Pedestal Notes*).
4. Conduit spacers.
5. Transformer pads.
6. Meter pedestal pads.
7. Underground secondary enclosures and extensions.
8. Ground rods and clamps.
9. Polyester pulling tape (2,500-pound tensile strength) in all conduit. Do not tie knots in the mule tape — it must be a continuous run.
10. Sand for initial backfill.
11. Rock-free dirt over initial backfill.
12. 1/2" to 3/4" gravel for the bottom of vaults and secondary enclosures.
13. Concrete or flowable fill where required. Flowable fill is NOT allowed as a substitute for concrete for PEC equipment pads. Flowable fill may be used as backfill in situations where trench settling may be an issue or anywhere that does not require structural strength. The 28-day compressive strength range when tested must be a minimum of 300 psi. Flowable fill is NOT a substitute for concrete except where explicitly listed in the Underground Installation Specifications.
14. Meter sockets. PEC will provide sockets only on PEC-supplied meter pedestals. See Specification 510-009, *Typical Pad, Trench, Conduit, & Meter Pedestal Notes.*
15. Primary enclosures and extensions (if applicable.)
16. Switchgear (if applicable.)
17. Bollards, if deemed necessary by PEC to protect electrical equipment. Design must be approved by PEC prior to installation. See Specification 500-102, *Equipment Bollards*.

PEC CONTRIBUTION PAID FOR BY DEVELOPER/MEMBER AS INDICATED IN THE LINE EXTENSION POLICY:

1. Primary conductors.
2. Secondary conductors.
3. Primary connectors.
4. Secondary connectors.
5. Transformers.
6. Meter pedestals with meter sockets.
7. Switchgear.

Refer to applicable drawings within these specifications.

REV	C	DATE	1/15/2025	REVISION	REMOVED NOTE 16	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

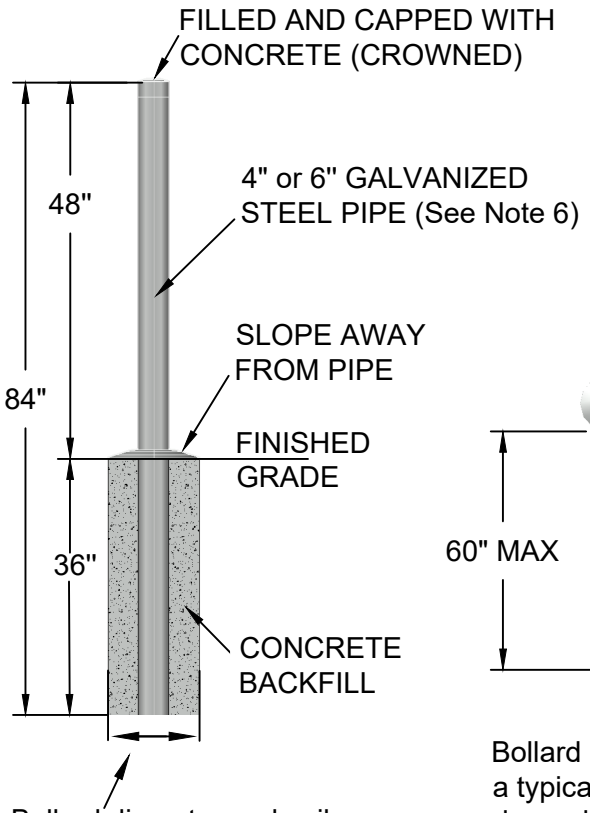
DEVELOPER/MEMBER/PEC SUPPLIED MATERIAL

drawn:	approved:	date:	500-100
AMJ	MMG	1/15/2025	

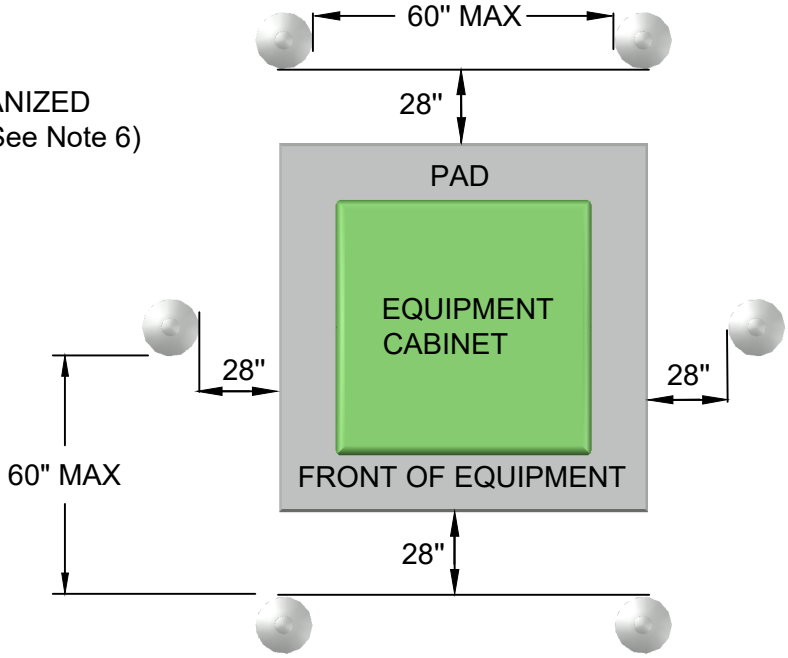
BOLLARD REQUIREMENTS:

1. Whenever possible, PEC equipment shall be located where it is not subject to vehicular damage. If PEC determines an equipment location will be subjected to vehicular damage, bollards shall be placed to protect the equipment, and the specifications outlined below shall be used.
2. Members shall provide, install, and maintain bollards.
3. PEC reserves the right to require bollards anywhere deemed appropriate.
4. Bollards shall be made of galvanized steel pipe and filled with concrete. Concrete shall be crowned on bollards.
5. Bollard installment shall avoid interference with grounding grid and conduits.
6. Bollards shall be 4" in diameter; however, in situations where high traffic volume exists, a 6" diameter post may be required.
7. Bollards placed in stable soil shall be surrounded with 6" of concrete. Bollards placed in sand or unstable soil shall be surrounded with 12" of concrete.
8. If several bollards are required, locate them no more than 5' apart.
9. For extra visibility, bollards shall be painted Safety Yellow and have reflective safety tape on them.
10. Area within protection bollards must remain clear for opening equipment doors and maintenance.
11. Exposure to irrigation and fertilizer may impact type of bollards required.

TYPICAL BOLLARD DETAIL & PLACEMENT



Bollard diameter and soil conditions will determine hole diameter. See notes 6 and 7.



Bollard placement and dimensions illustrated here depict a typical application. Bollard placement may vary depending on equipment and surrounding conditions. **Bollard design and placement must be approved by PEC prior to installation.**

REV		DATE	10/15/2024	REVISION	ISSUE FOR CONSTRUCTION	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECFICATIONS

EQUIPMENT BOLLARDS

drawn:	approved:	date:	500-102
AMJ	MMG	10/15/2024	

TYPE OF MATERIAL	MANUFACTURER	PHONE NUMBER	ADDRESS	EMAIL/WEBSITE
CONDUIT SPACERS	CANTEX	(817) 215-7000	301 COMMERCE ST. STE. 2700 FORT WORTH, TX 76102	cantexinc.com
GROUND ROD CLAMPS	PENN UNION	(814) 734-1631	229 WATERFORD ST. EDINBORO, PA 16412	sales@penn-union.com
MANHOLES	RINKER MATERIALS	(210) 661-2351	402 N WW WHITE RD. SAN ANTONIO, TX 78219	rinkerpipe.com/locations
SECONDARY ENCLOSURES	CHANNELL COMMERCIAL CORP.	(214) 304-7800	1700 JUSTIN RD. ROCKWALL, TX 75087	info@channell.com
SECONDARY ENCLOSURES	NORDIC FIBERGLASS, INC.	(218) 745-5095	21415 HIGHWAY 75 NW. WARREN, MN 56762	sales@nordicfiberglass.com
SECONDARY ENCLOSURES	PENCELL	(573) 682-5521	546 ENGLISH RD. ROCKY MOUNT, NC 27804	hubbell.com/ hubbellpowersystems/ en/hps-brands/pencell
SECTIONALIZING ENCLOSURES	ABB	(763) 571-7758	7580 COMMERCE LANE NE FRIDLEY, MN 55432	abb.com/padmountswitch
SECTIONALIZING ENCLOSURES	MAYSTEEL	(262) 251-1632	6199 COUNTY RD. W. ALLENTON, WI 53002	maysteel.com/contact
SECONDARY/ SECTIONALIZING ENCLOSURES	ALUMA-FORM	(901) 362-0100	3625 OLD GETWELL RD. MEMPHIS, TN 38118	alumaform.com
SECONDARY/ SECTIONALIZING ENCLOSURES	AMERICAN PADMOUNT SYSTEMS	(864) 380-7955	6133 BLUE CIRCLE DR. HOPKINS, MN 55343	Gary.Harter@ampadsys.com
SECONDARY/ SECTIONALIZING ENCLOSURES	DURHAM	(417) 532-7121	722 DURHAM RD. LEBANON, MO 65536	durhamusa.com
SECONDARY/ SECTIONALIZING ENCLOSURES	HUBBELL POWER SYSTEMS	(573) 682-5521	210 N. ALLEN CENTRALIA, MO. 65240	hpscs@hubbell.com
TAP BOX	GIVCO ELECTRICAL PRODUCTS	(830) 624-8598	22133 OLD NACOGDOCHES RD. NEW BRAUNFELS, TX 78132	givco.net
TAP BOX	HUBBELL POWER SYSTEMS (CMC)	(573) 682-5521	210 N. ALLEN CENTRALIA, MO. 65240	hpscs@hubbell.com
TAP BOX	MILBANK	(816) 483-5314	4801 DERAMUS KANSAS CITY, MO 64120	milbankworks.com
VAULTS AND LIDS	HALLIDAY PRODUCTS	(800) 298-1027	6401 EDGEWATER DR. ORLANDO, FL 32810	sales@hallidayproducts.com
VAULTS AND LIDS	HUBBELL POWER SYSTEMS (CDR)	(573) 682-5521	210 N. ALLEN CENTRALIA, MO. 65240	hpscs@hubbell.com
VAULTS AND LIDS	LONE STAR PRECAST	(512) 312-2121	454 KELLY SMITH LN BUDA, TX 78610	ebray@lsprecast.com
VAULTS AND LIDS	OLDCASTLE INFRASTRUCTURE	(210) 923-4523	1900 RILLING RD. SAN ANTONIO, TX 78214	contact@oldcastleprecast.com
VAULTS AND MANHOLES	THE TURNER COMPANY	(817) 638-9053	11049 S. HWY. 287 RHOME, TX 76078	sharon@theturnerco.com

REV	F	DATE	1/15/2025	REVISION	ADDED TAP BOX MANUFACTURERS GIVCO, MILBANK	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

APPROVED MANUFACTURERS AND DISTRIBUTORS

drawn:	approved:	date:	500-103
AMJ	MMG	1/15/2025	

DISTRIBUTOR	PHONE NUMBER	ADDRESS	EMAIL/WEBSITE
IRBY	(512) 635-8177	509 W. SH 71 BASTROP, TX 78602	tboyd@irby.com
	(512) 787-8288		ryan.johnson@irby.com
TECHLINE	(512) 809-6930	9609 BECK CIRCLE AUSTIN, TX 78758	techline-inc.com
TEXAS ELECTRIC COOPERATIVES	(210) 373-7840	3600 BRITTMORE RD SUITE 120 HOUSTON, TX 77043	sw@tec-sales.com

REV	F	DATE	1/15/2025	REVISION	ADDED TAP BOX MANUFACTURERS GIVCO, MILBANK	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

APPROVED MANUFACTURERS AND DISTRIBUTORS

drawn:	approved:	date:	500-103
AMJ	MMG	1/15/2025	

TYPICAL SPECIFICATIONS FOR ALL PADS

1. Require 3" or 4" conduit (unless otherwise specified by PEC) with bell-end fittings to extend 1 1/2" to 2" above pad. Typical conduit specifications are on the next page.
2. Pads must extend a minimum of 4" above final grade and 1 1/2" below final grade. All pads must be placed on a slope less than or equal to 3:1. If greater than 3:1, contractor must bring slope to required grade.
3. All disturbed soil underneath pad must be replaced by concrete.
4. All ground rods shall be 3/4" X 10' copper-clad with clamp and must extend 3" above top of pad.
5. Wood float finish leaving pad square and level with no dips or crown.
6. **Contact PEC before pouring concrete and comply with the following instructions:**
   a. Pre-pour inspection: Check framing and layout of pad and conduit components.
   b. Final inspection: Overall review of pad and conduits. Ensure bell ends are on conduit.

TYPICAL FOR SINGLE-PHASE TRANSFORMER, COMBINATION, SECTIONALIZER, AND SECONDARY PADS

7. Concrete to have minimum strength of 3,000 PSI.
8. Steel reinforcing shall be 6" X 6" No. 10 wire mesh or 3/8" re-bar on 12" center, stopping 1" from the sides.

TYPICAL FOR THREE-PHASE TRANSFORMER PADS

9. Concrete testing, 4,000 PSI; 4%–6% entrained air, 3/4" maximum-size aggregate.
10. Steel reinforcement shall be 3/8" re-bar on 12" center, stopping 1" from sides.
11. Minimum concrete cover over reinforcing steel 2" unless noted.

TYPICAL TRENCH SPECIFICATIONS

12. Trenches must be kept free of building materials and other debris in active building sites.
13. Bottom of trench shall be sanded to provide smooth, even support of conduits.
14. Initial backfill shall be manufactured or commercial sand placed directly around conduits. Minimum 3/8" pea gravel may be used for initial backfill in flood-prone areas.
15. Schedule 40 electrical-grade PVC conduit. Schedule 80 electrical-grade conduit may be used with rock-free backfill in place of sand in secondary-only trenches.
16. Failure to receive inspection will require removal of the backfill to allow inspection. Contact PEC to receive all applicable inspections.
17. Minimum cover shall be 30" from the top of primary conduit to sub-grade. With PEC approval, minimum cover requirements may be reduced by 6" with every 2" of 3,000 PSI concrete poured directly onto conduit. ***Contact PEC before pouring concrete.***
18. Concrete or flowable fill shall be poured around all conduit crossings and 90-degree bends. On conduit bends of other angles, concrete or flowable fill may be required upon inspection. ***Contact PEC before pouring concrete.***
19. Trench may be used jointly with gas and other utilities if adequate separation is provided. There shall be a minimum of 12" separation between electrical conduits and all other utilities' conduits. See drawings 510-014, 510-022, 510-023, 510-024, and 510-025.
20. Warning tape shall be a minimum of 12" above electrical conduits.
21. All other utilities must be routed around PEC equipment vaults, pedestals, transformers, primary enclosures, and/or similar underground electric facilities.
22. For 2" and **smaller** waterlines, special permission must be granted by PEC. Water lines larger than 2" are not allowed in PEC trenches.

REV	E	DATE	1/15/2025	REVISION	UPDATED TITLE	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

TYPICAL PAD, TRENCH, CONDUIT, & METER PEDESTAL NOTES
PAGE 1 OF 3

drawn:	approved:	date:	510-009
AMJ	MMG	1/15/2025	

TYPICAL TRENCH SPECIFICATIONS (CONTINUED)

23. Conduit may be under pavement if a depth of 30" cover to sub-grade is maintained.
24. Underground conductor from secondary enclosure/transformer to meter shall have 24" of cover. This depth may be reduced to 18" when a 2" supplemental protective covering of concrete is provided. If rigid conduit is used, the depth can be reduced by 6". Red electric warning tape is required in the ditch.

TYPICAL CONDUIT SPECIFICATIONS

1. Primary Conduit:
   a. 3" Schedule 40 electrical-grade PVC with 36" minimum Schedule 80 radius bends.
   b. 4" Schedule 40 electrical-grade PVC with 48" minimum Schedule 80 radius bends.
2. Secondary/Service Conduit:
   a. 3" Schedule 80 electrical-grade PVC with 24" minimum Schedule 80 radius bends. Schedule 40 with 24" minimum Schedule 80 radius bends can be used if embedded in sand. Size service conduit as needed.
3. Controls or Temporary Service Conduit:
   a. 2" Schedule 40 electrical-grade PVC with 24" minimum Schedule 80 radius bends.
4. Riser Conduit or Other Above-Ground Conduit:
   a. 3" or 4" Schedule 80 electrical-grade PVC.

Note: Contractor may be required to pull a mandrel, of a diameter not less than 80% of the inside diameter of the conduit through all conduits, under the supervision of a PEC representative.

Conduit Legend
Typical in All Drawings

(P) Primary Conduit (S) Secondary Conduit (CW) Communications or Water (G) Gas Line (AS) Alternate Secondary Conduit

Primary Phasing Legend

Phasing for three-phase primary applications: pad-mounted enclosures, combination pads, three-phase transformers, and three-phase risers.

R (P) Red = Phase A B (P) Blue = Phase B Y (P) Yellow = Phase C

REV	E	DATE	1/15/2025	REVISION	UPDATED TITLE	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

TYPICAL PAD, TRENCH, CONDUIT, & METER PEDESTAL NOTES
PAGE 2 OF 3

drawn:	approved:	date:	510-009
AMJ	MMG	1/15/2025	

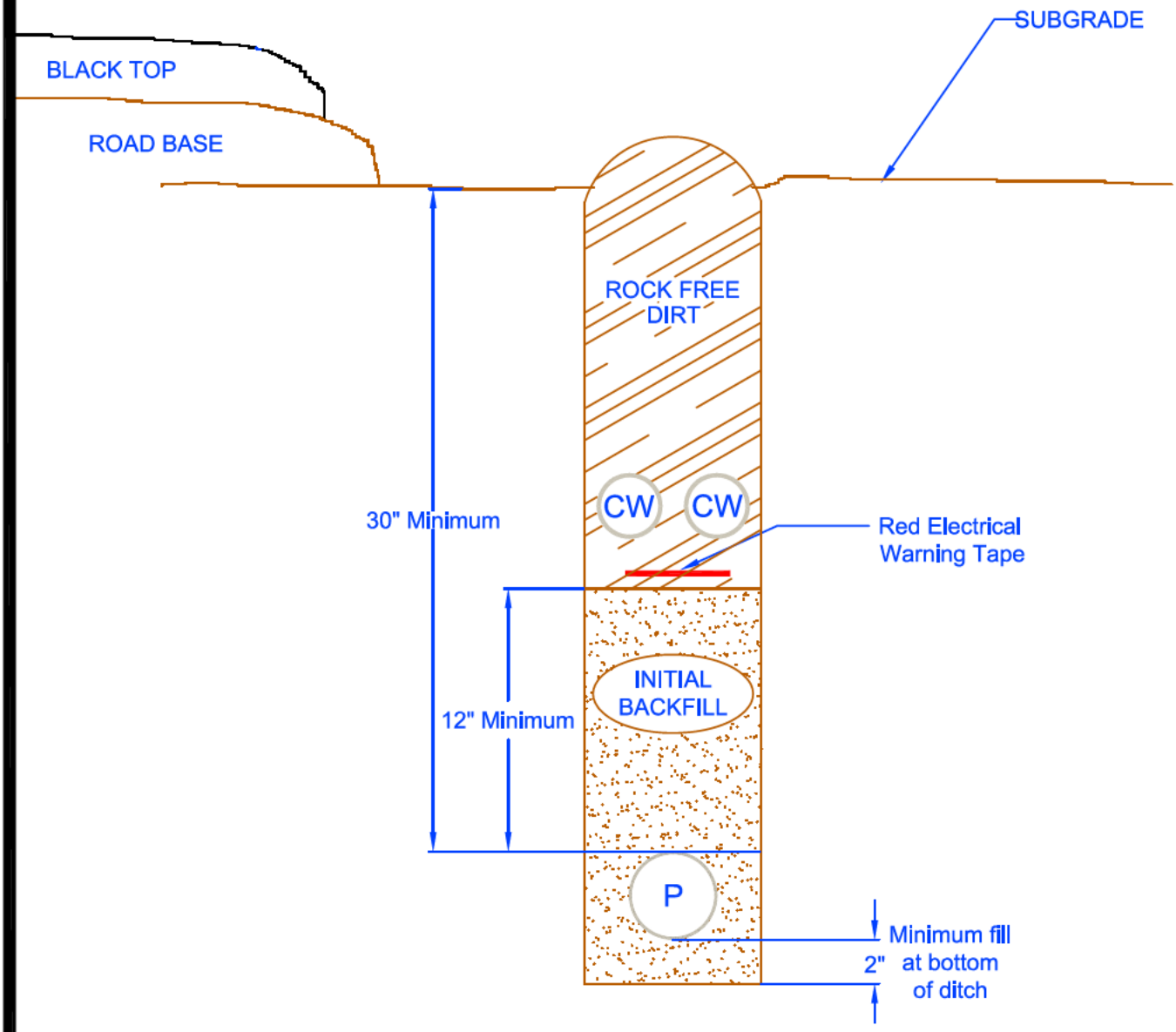
TYPICAL METER PEDESTAL SPECIFICATIONS

Meter pedestals are approved by PEC. In situations where meter pedestals are used, the following conditions will apply:

1. Purchase and install circuit breaker in box. Circuit breakers are the bolt-in type. The box will accommodate 150-amp and 200-amp breakers. The breaker must have an interrupting capacity of 10,000 amps rated at 240 volts. Approved models: GE TQD22[amperage]WL and Eaton/Cutler-Hammer FD2200 or equal (old Westinghouse CA2200W).
2. Install insulated jumpers from bottom of meter socket to top of breakers.
3. Install meter pedestal pad in accordance with Drawing 520-010, *Pad for Service Meter Pedestal*.
4. Member will be responsible for the installation of underground cable from the meter pedestal to the house and the connections to the bottom of the circuit breakers. The underground cable used from the meter pedestal to the house shall be an approved type for underground installation (USE or UF type). Conductor size will be based on member load, location of meter, and National Electrical Code for size of conduit.

   PEC Responsibility:

   1. Furnish and install meter pedestal.
   2. Furnish and install combination meter socket and breaker box.
   3. Install jumper wires from top of meter socket to pedestal connector and set meter on connect order after all work has been completed.

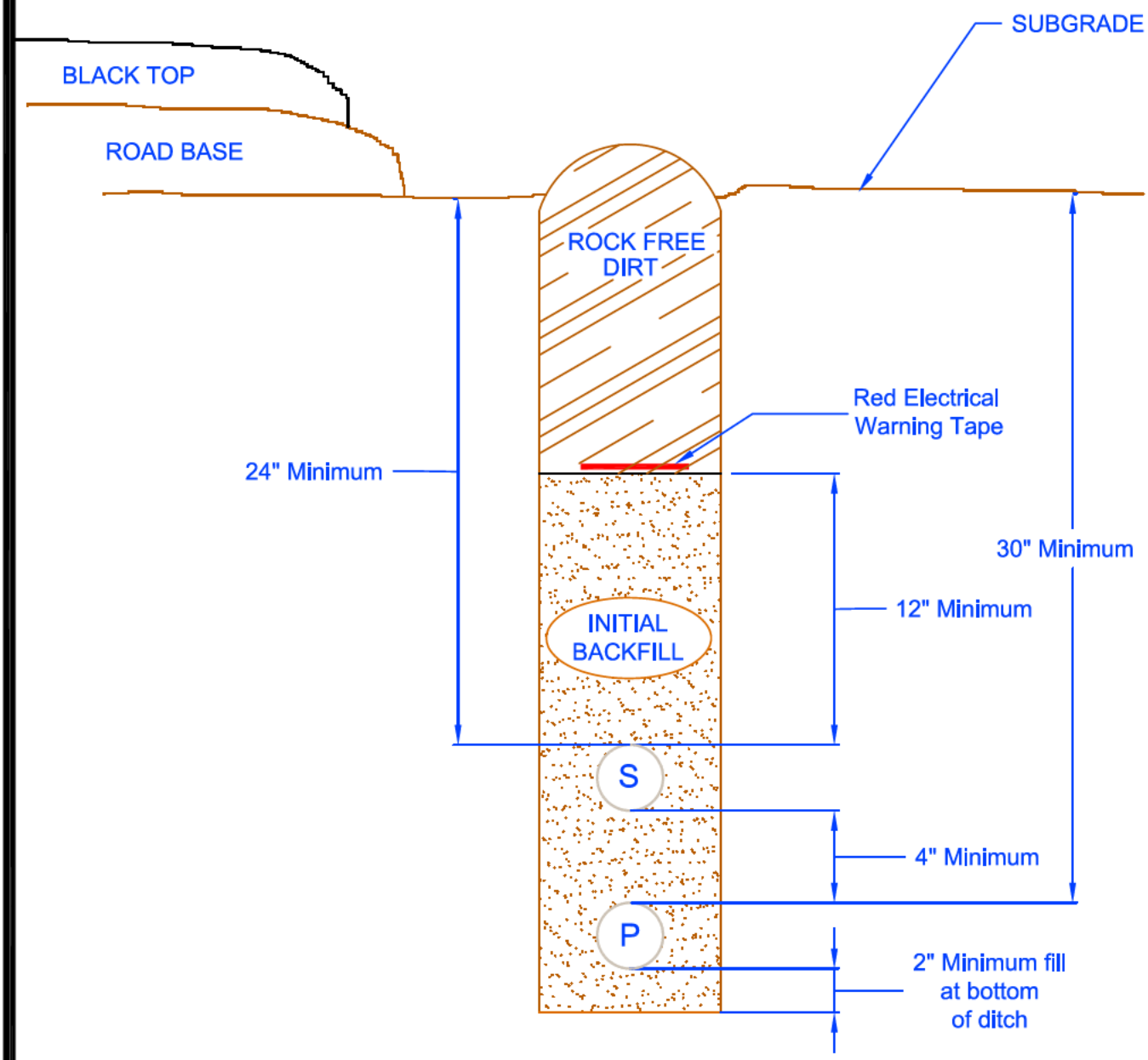


Reference Drawing
510-009-0911 for
Typical Trench Details

PEDERNALES ELECTRIC
COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

1Ø Conduit Arrangement
for Primary
601 to 50,000 Volts

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	510-010-0911



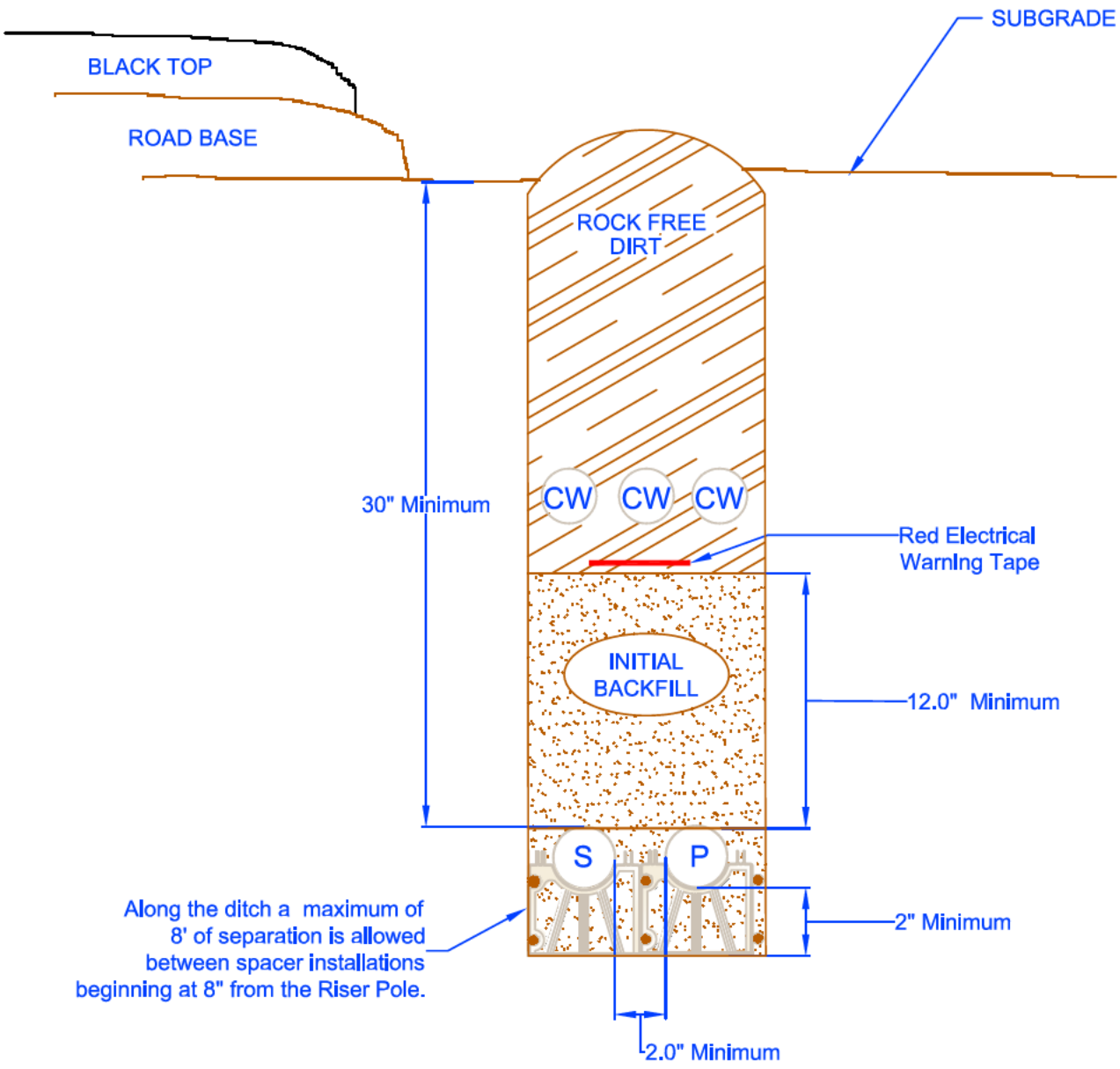
Reference Drawing
510-009-0911 for
Typical Trench Details

PEDERNALES ELECTRIC COOPERATIVE, INC.

URD DEVELOPERS SPECIFICATIONS

1Ø Conduit Arrangement for Primary and Secondary

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	510-012-0911

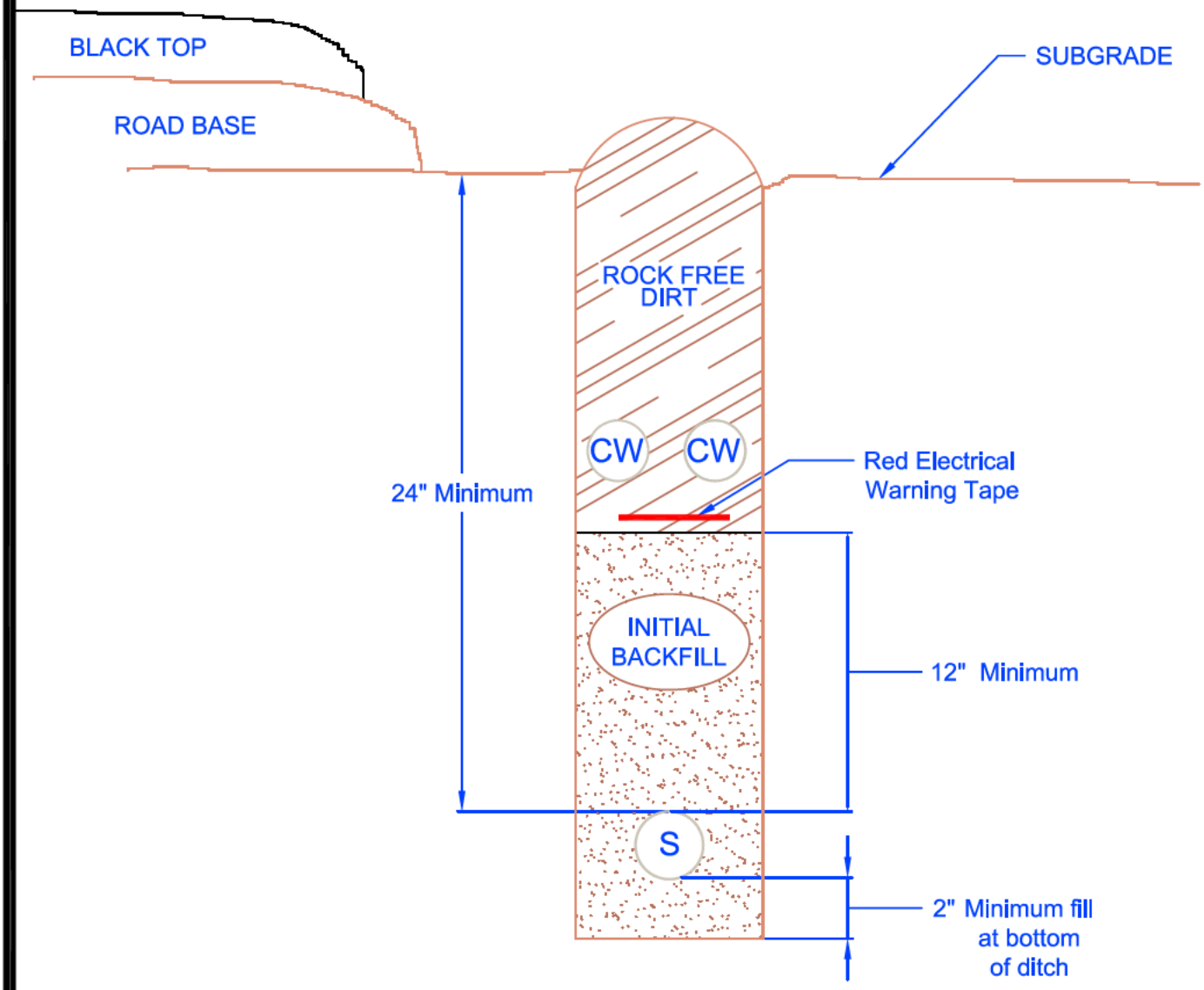


Reference Drawing
510-009-0911 for
Typical Trench Details

PEDERNALES ELECTRIC
COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

1Ø Conduit Arrangement Joint with other Utilites

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	510-014-0911



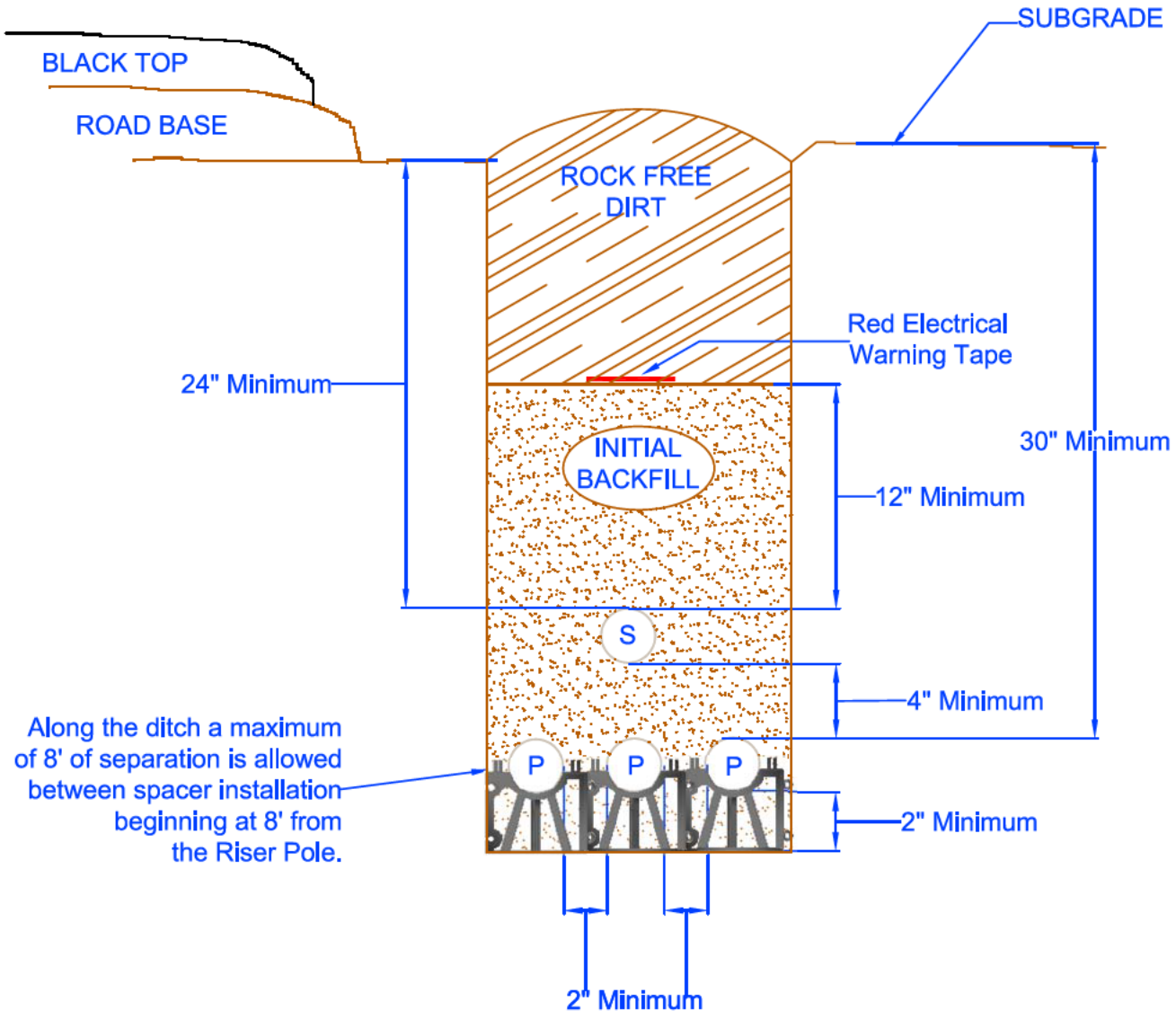
Reference Drawing
510-009-0911 for
Typical Trench Details

PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

1Ø Conduit Arrangement for Service 0 to 600 Volts

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	510-016-0911

OPTION 1



Reference Drawing
510-009-0911 for
Typical Trench Details

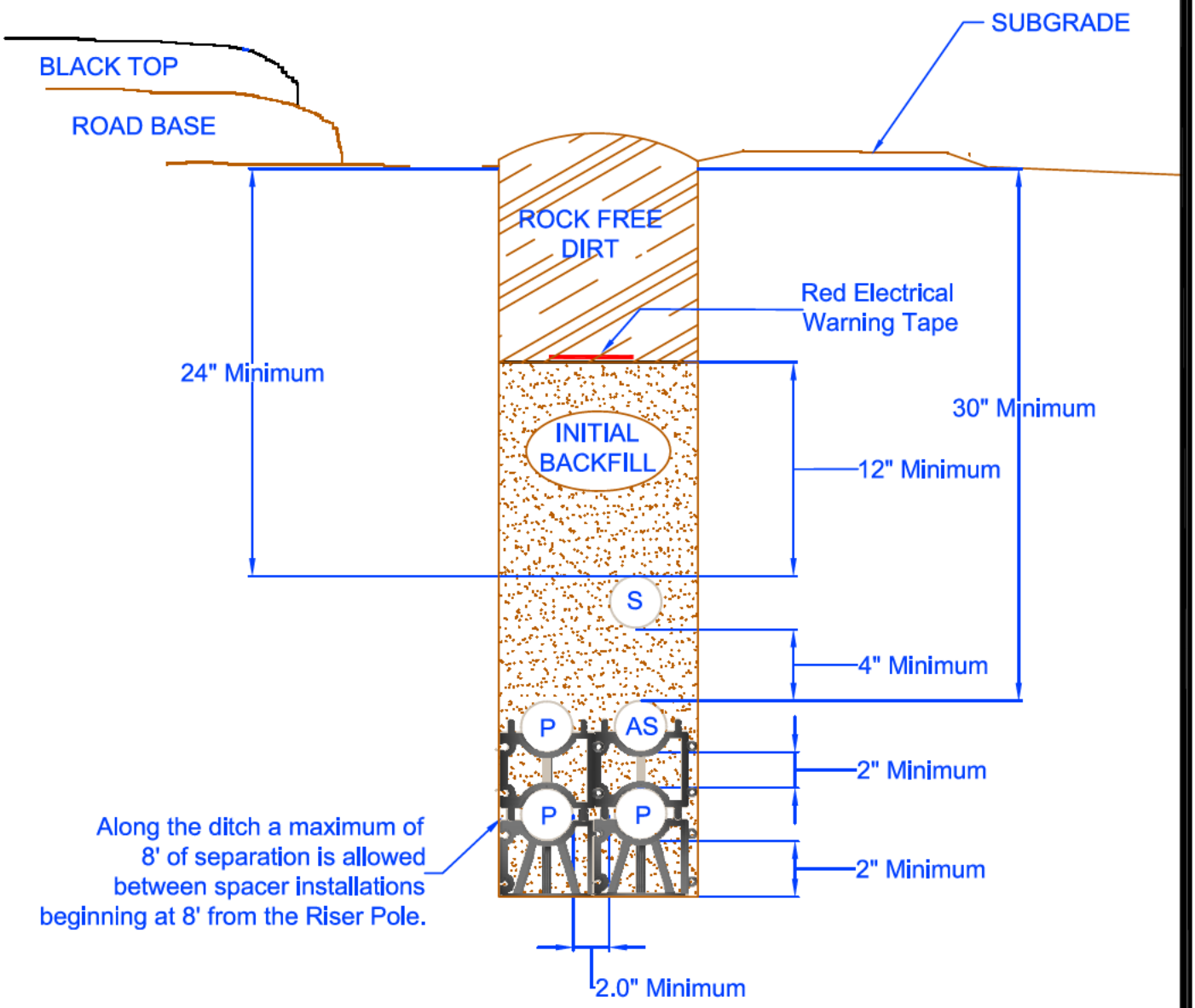
PEDERNALES ELECTRIC COOPERATIVE, INC.

URD DEVELOPER'S SPECIFICATIONS

3Ø Conduit Arrangement
Electric Only
Primary and Secondary

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	510-020-0911

OPTION 2



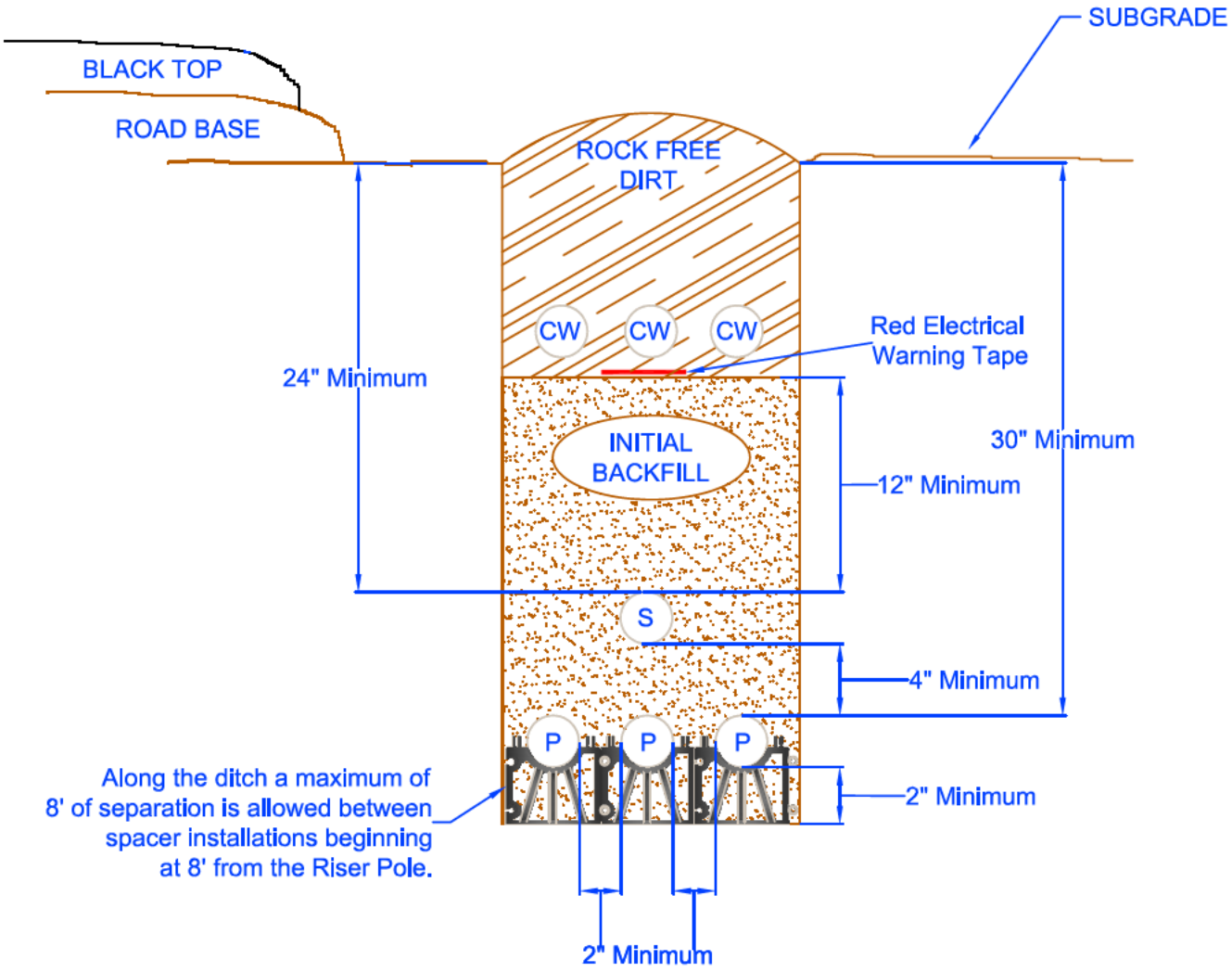
Reference Drawing
510-009-0911 for
Typical Trench Details

PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

3Ø Conduit Arrangement
Electric Only
Primary and Secondary

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	510-020-0911

OPTION 1



Reference Drawing
510-009-0911 for
Typical Trench Details

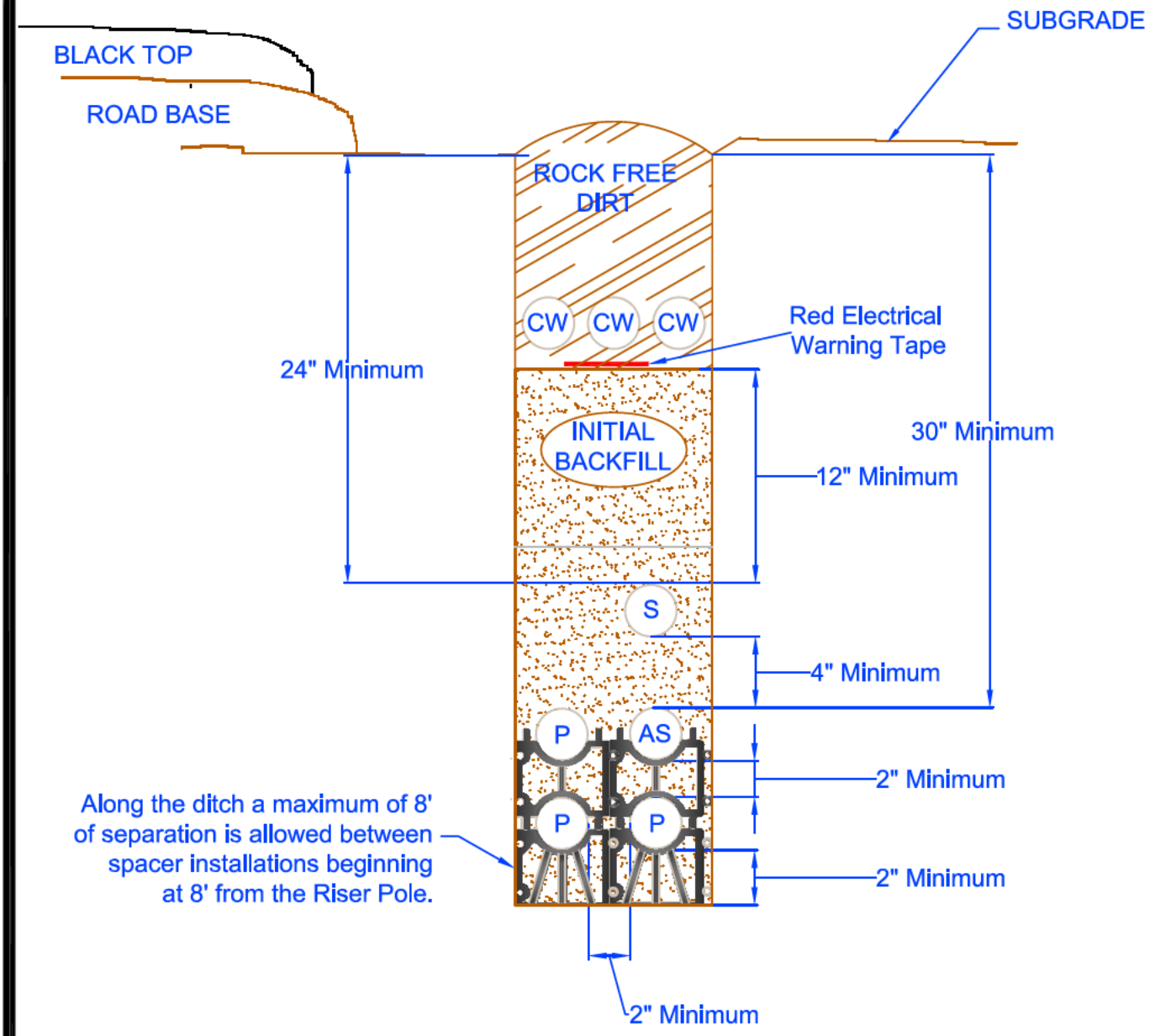
PEDERNALES ELECTRIC COOPERATIVE, INC.

URD DEVELOPER'S SPECIFICATIONS

3Ø Conduit Arrangement
Joint with Other Utilities

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	510-022-0911

OPTION 2



Reference Drawing
510-009-0911 for
Typical Trench Details

PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

3Ø Conduit Arrangement
Joint with Other Utilities

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	510-022-0911

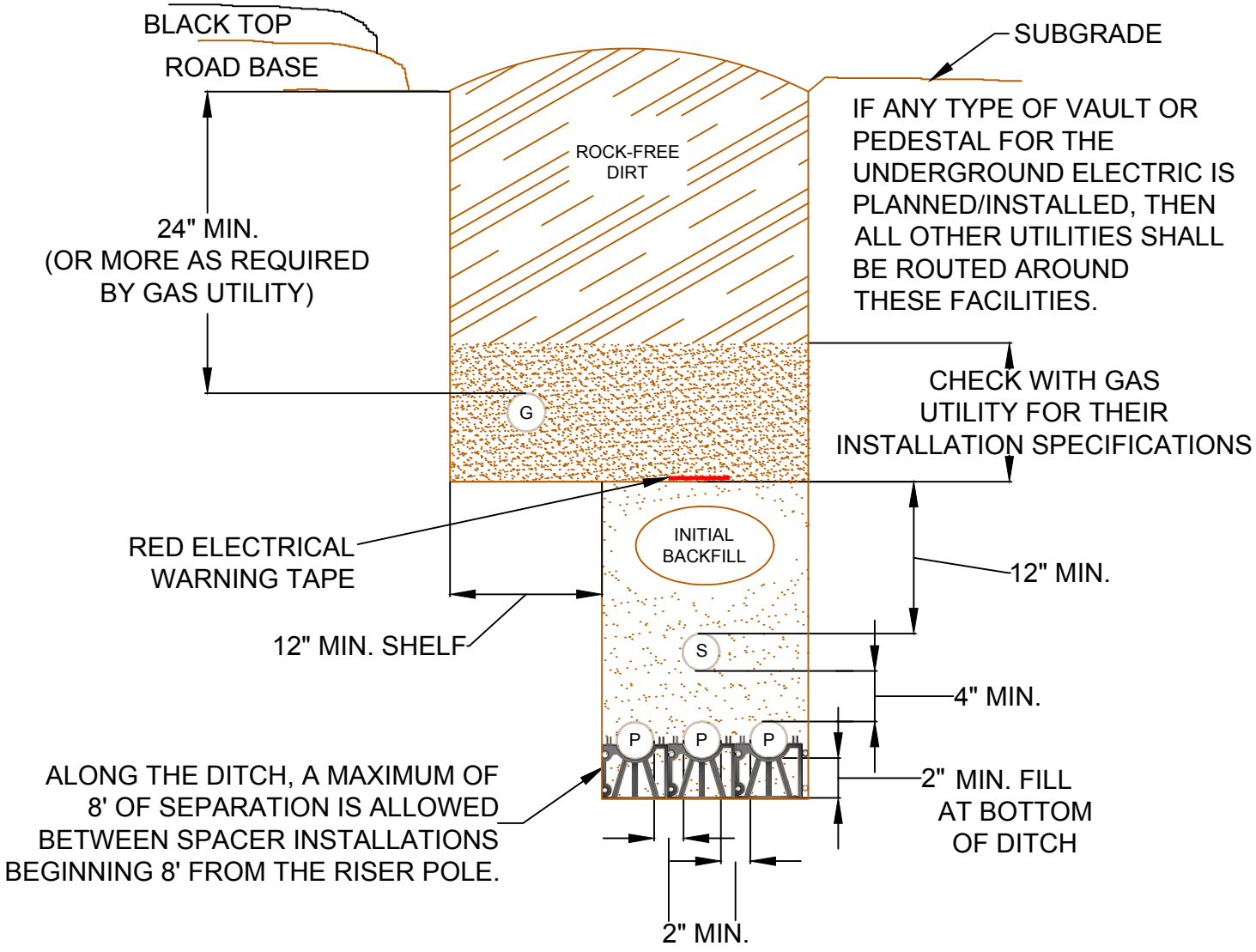
PEC prefers to avoid joint trench installations with gas lines. If a gas joint trench is required, contact PEC for permission and to coordinate inspections. A joint trench as depicted below or on drawing 510-025 is permitted with prior approval providing the following conditions are met:

- The joint trench is not in a public right of way.
- The gas utility is regulated by the Public Utility Commision of Texas.
- The trench installation must meet PEC, gas utility and national standards.
- The maximum pressure of the gas line is 60 PSI or less.

Gas lines not meeting the listed requirements above are not permitted in trenches with PEC facilities. These lines shall be separated horizontally from primary and secondary conduits by at least 24 inches of undisturbed earth. A final inspection by a PEC inspector is required before the gas facilities are installed in the trench and prior to backfill.

Other Notes:

- 1Ø installation is allowable. Gas main shall be a minimum of 12" from all electrical conduit.
- Reference drawing 510-009 for typical trench details.
- See drawing 510-025 for joint gas trench stacked installation option.

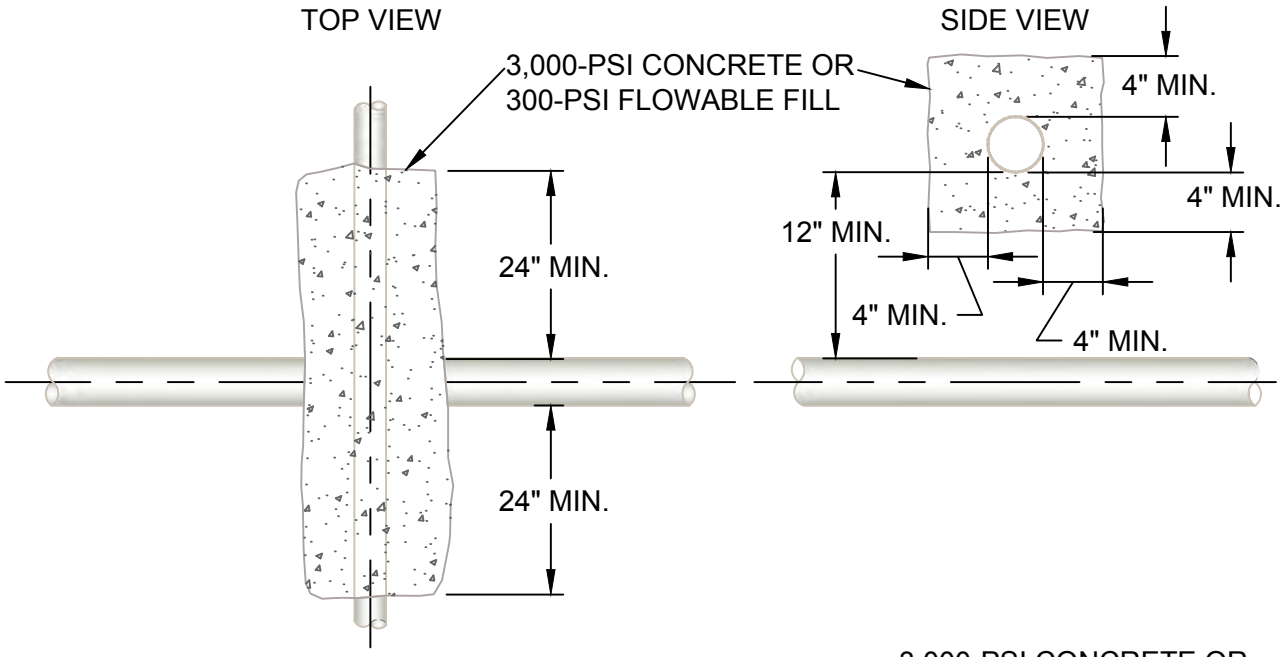


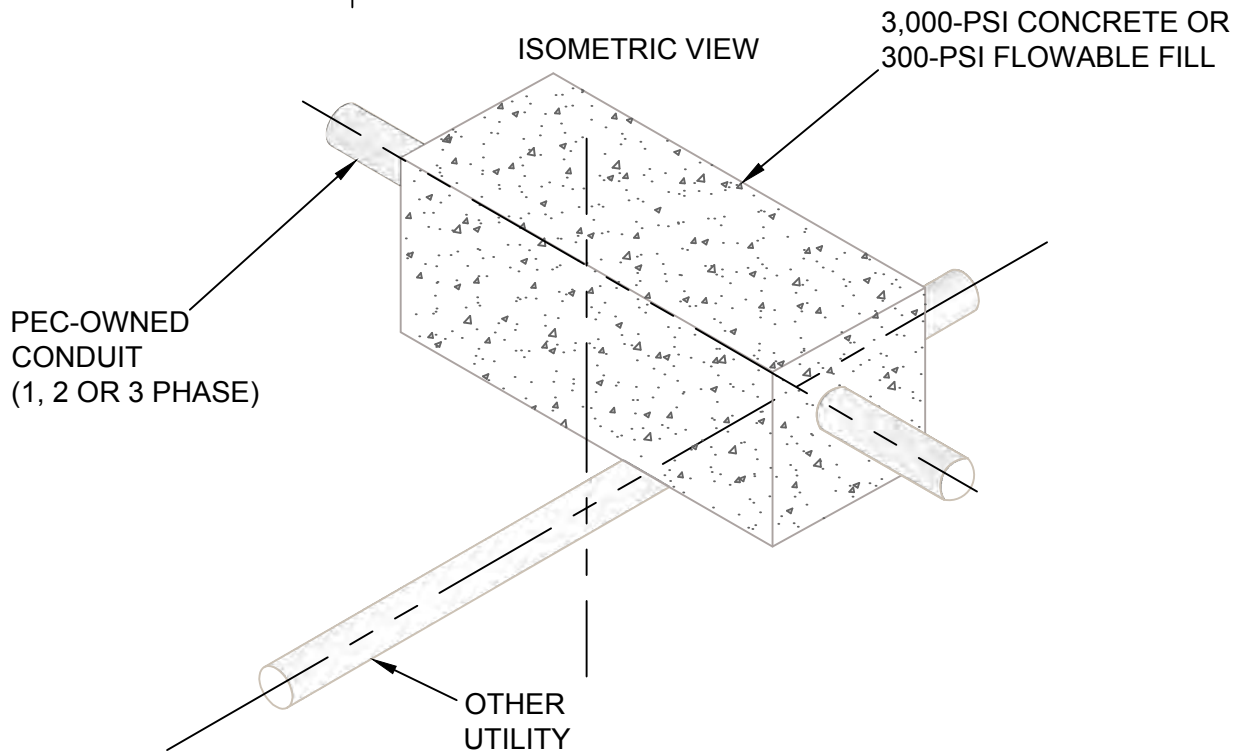
REV	DATE	REVISION	BY	CHK	APR
A	03/26/2020	ADDED NOTE FOR JOINT USE WITH NATURAL GAS	RWC	MMG	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

3Ø PRIMARY CONDUIT ARRANGEMENT JOINT WITH NATURAL GAS HORIZONTAL OPTION

drawn:	approved:	date:	
RWC	MMG	03/26/2020	510-023





NOTES:

1. REFER TO APPROPRIATE DRAWINGS FOR CORRECT EMBEDMENT DEPTH.
2. 3,000-PSI CONCRETE OR 300-PSI FLOWABLE FILL TO BE A MINIMUM THICKNESS OF 4" AROUND CONDUIT.
3. THIS INSTALLATION APPLIES WHEREVER THE ELECTRICAL CONDUIT CROSSES ABOVE ANY OTHER CONDUIT.
4. IF ANOTHER UTILITY CROSSES OVER A PEC CONDUIT SYSTEM, THE OTHER UTILITY MUST COMPLY WITH NESC RULES 353B1 AND 353B2.

REV	A	DATE	07/09/2020	REVISION	ADD FLOWABLE FILL TO CONCRETE NOTES	BY	RWC	CHK	SSS	APR	MMG

UNDERGROUND
INSTALLATION
SPECIFICATIONS

CONDUIT CROSSING DETAIL
FOR PEC ABOVE OTHER UTILITIES

drawn:	approved:	date:	510-024
RWC	MMG	07/09/2020	

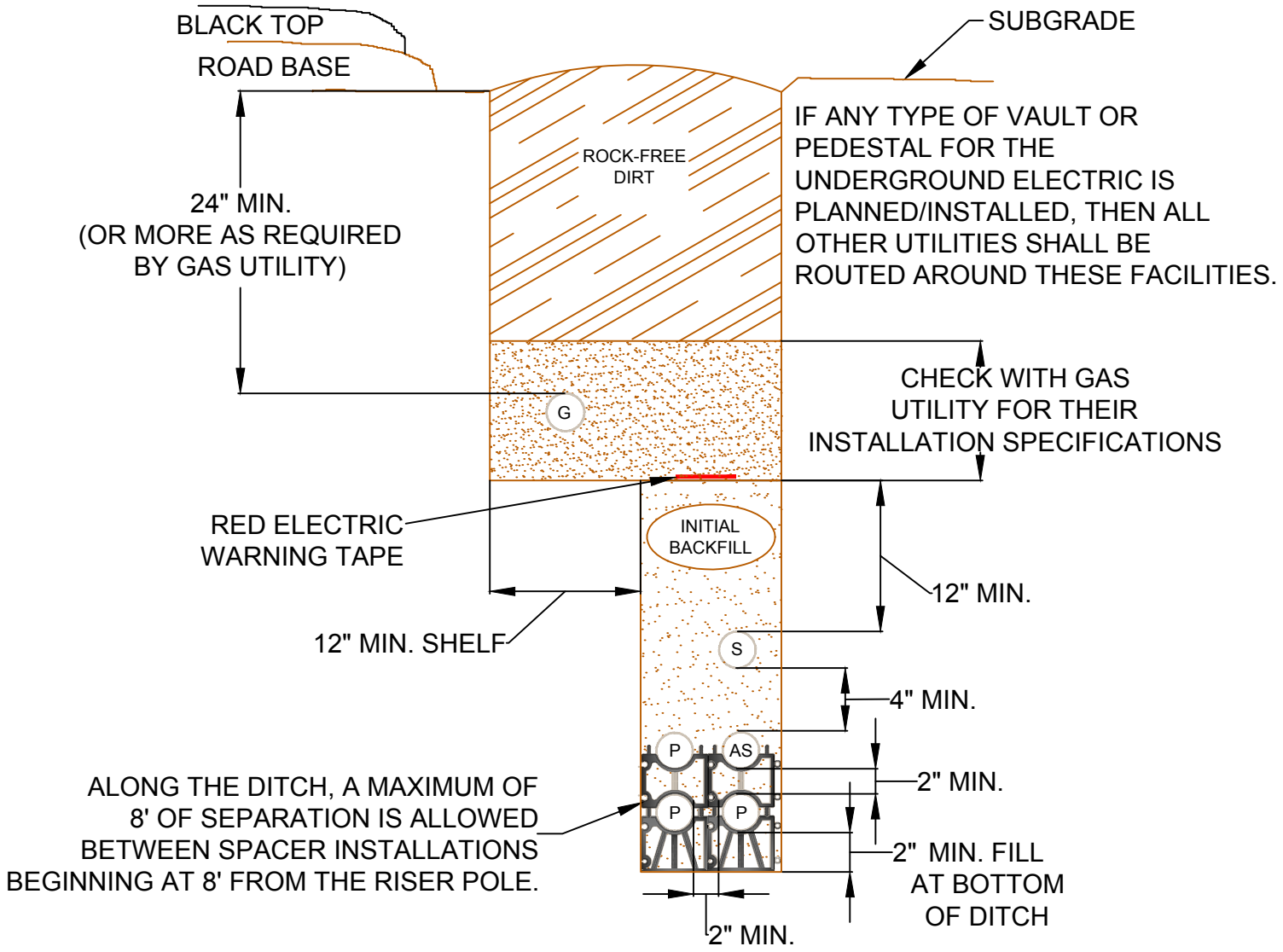
PEC prefers to avoid joint trench installations with gas lines. If a gas joint trench is required, contact PEC for permission and to coordinate inspections. A joint trench as depicted below or on drawing 510-023 is permitted with prior approval providing the following conditions are met:

- The joint trench is not in a public right of way.
- The gas utility is regulated by the Public Utility Commision of Texas.
- The trench installation must meet PEC, gas utility and national standards.
- The maximum pressure of the gas line is 60 PSI or less.

Gas lines not meeting the listed requirements above are not permitted in trenches with PEC facilities. These lines shall be separated horizontally from primary and secondary conduits by at least 24 inches of undisturbed earth. A final inspection by a PEC inspector is required before the gas facilities are installed in the trench and prior to backfill.

Other Notes:

- 1Ø installation is allowable. Gas main shall be a minimum of 12" from all electrical conduit.
- Reference drawing 510-009 for typical trench details.
- See drawing 510-023 for joint gas trench horizontal installation option.

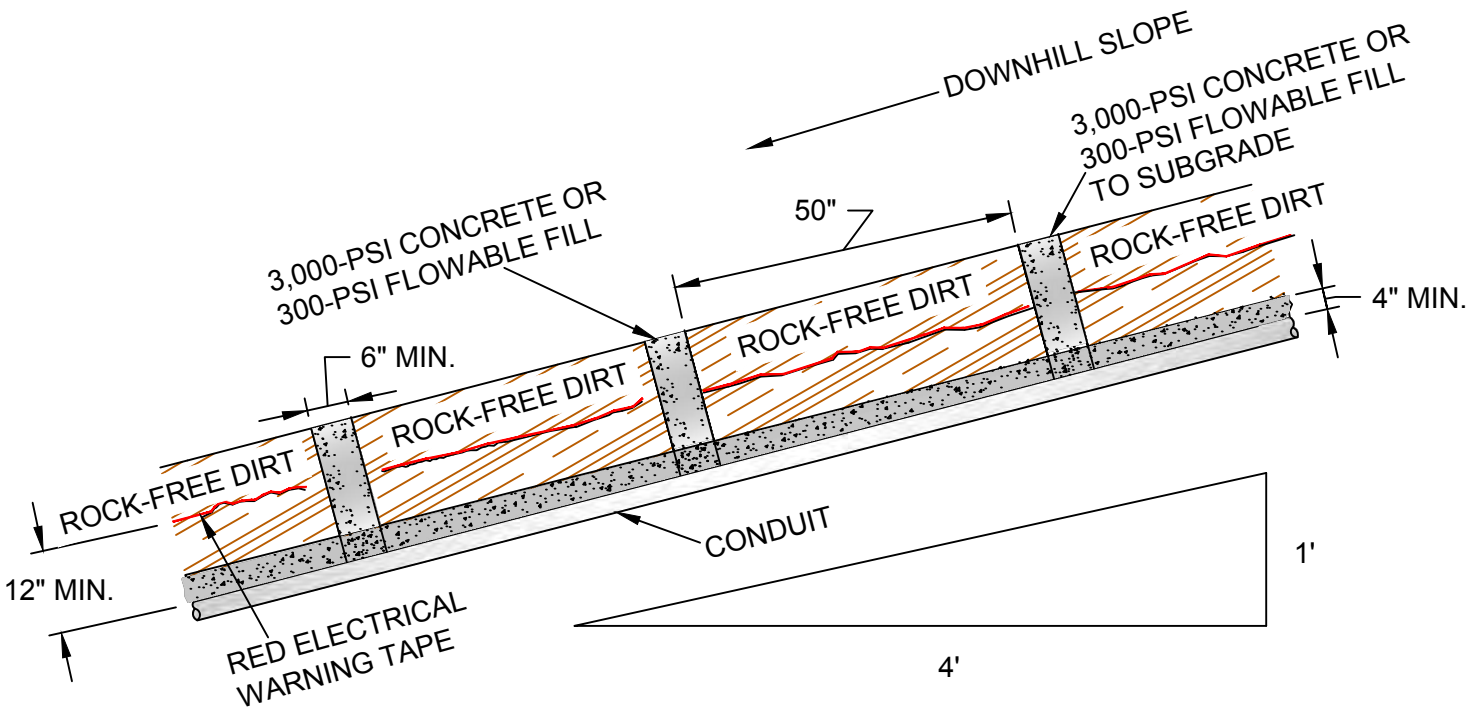


REV	A	DATE	03/26/2020	REVISION	ADDED NOTE FOR JOINT USE WITH NATURAL GAS	BY	RWC	CHK	MMG	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

3Ø PRIMARY CONDUIT ARRANGEMENT
JOINT WITH NATURAL GAS
STACKED OPTION

drawn:	approved:	date:	
RWC	MMG	03/26/2020	510-025



NOTES:

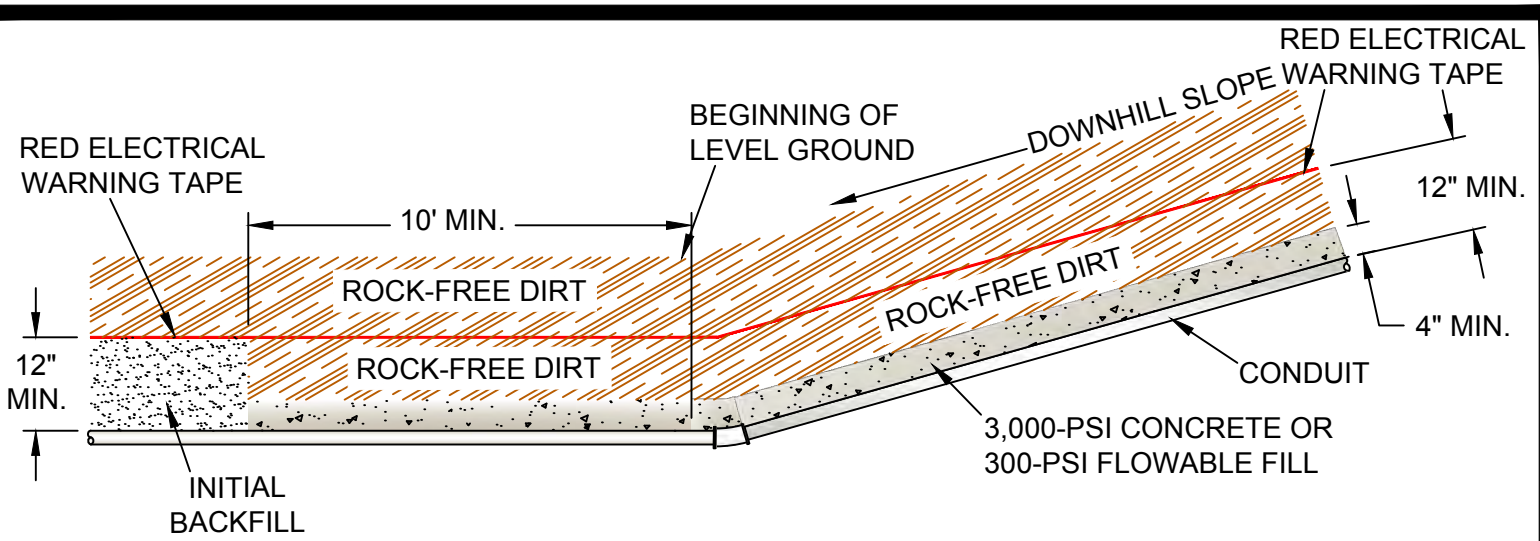
1. REFER TO APPROPRIATE TRENCH DRAWING FOR CORRECT EMBEDMENT DEPTH.
2. AS AN ALTERNATIVE, SEE DRAWING 510-027.

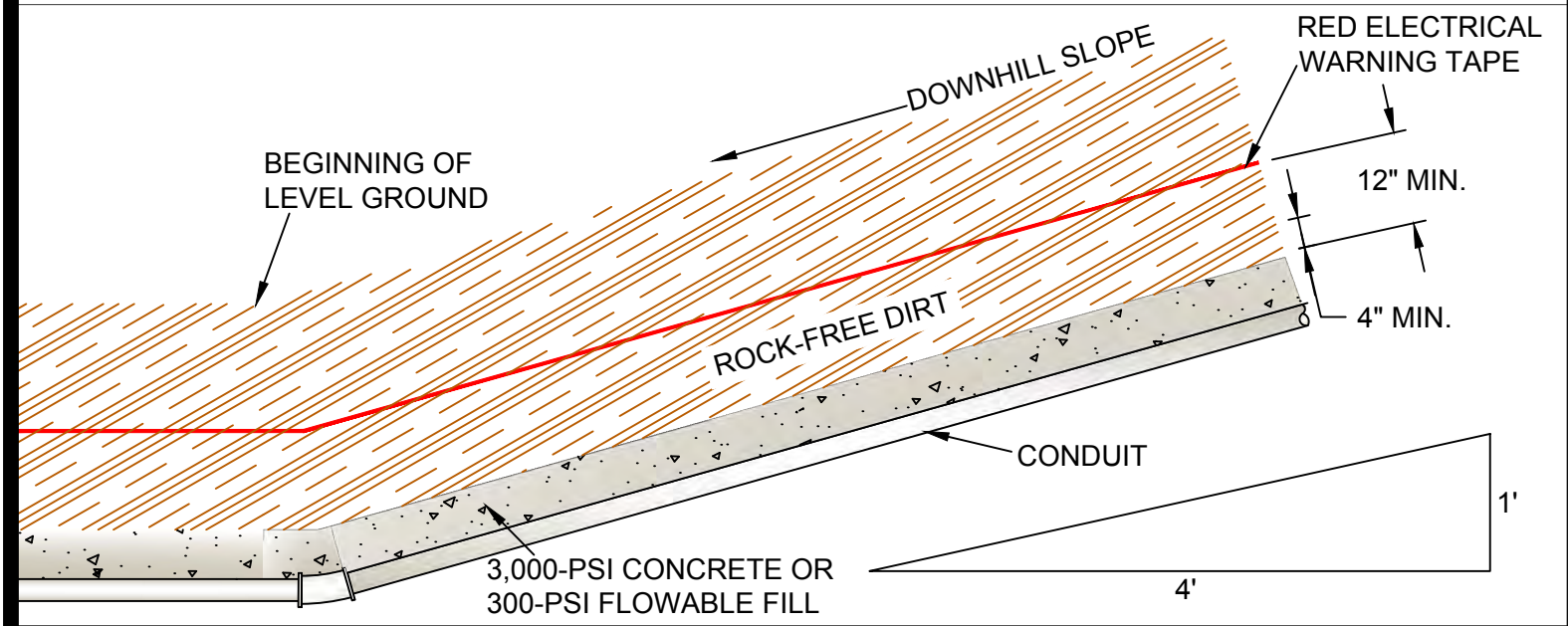
REV	A	DATE	07/09/2020	REVISION	ISSUE FOR CONSTRUCTION	BY	RWC	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

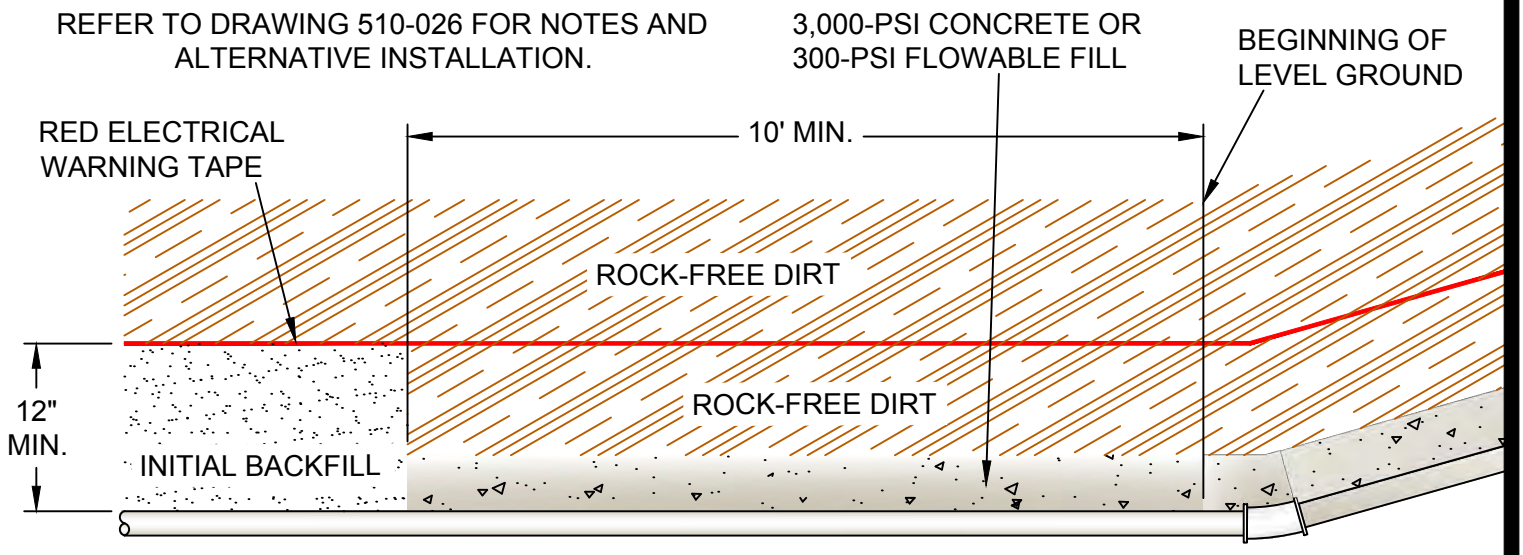
CONDUIT INSTALLATION ON SLOPE GREATER THAN 25%

drawn:	approved:	date:	510-026
RWC	MMG	07/09/2020	





REFER TO DRAWING 510-026 FOR NOTES AND ALTERNATIVE INSTALLATION.

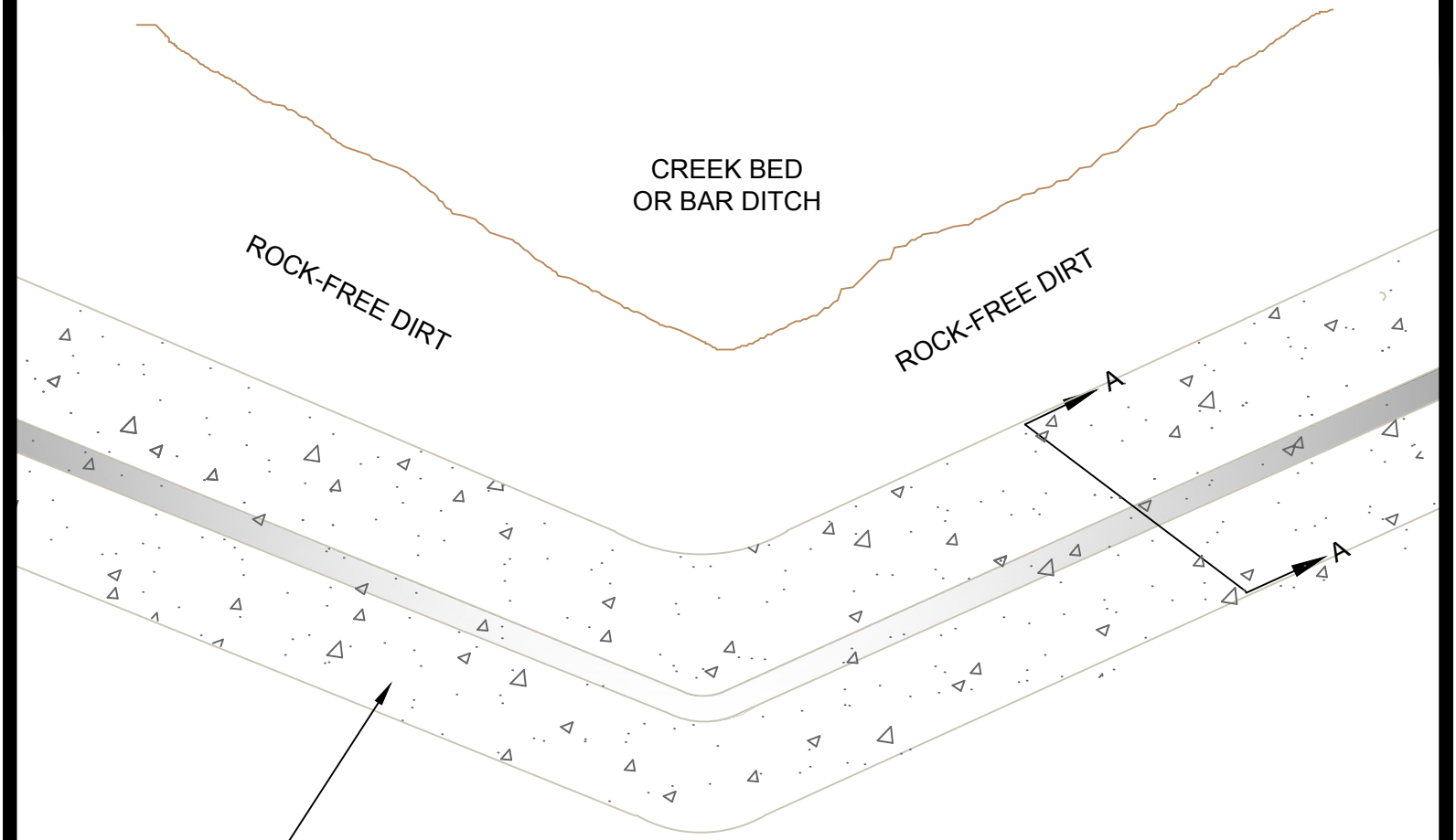


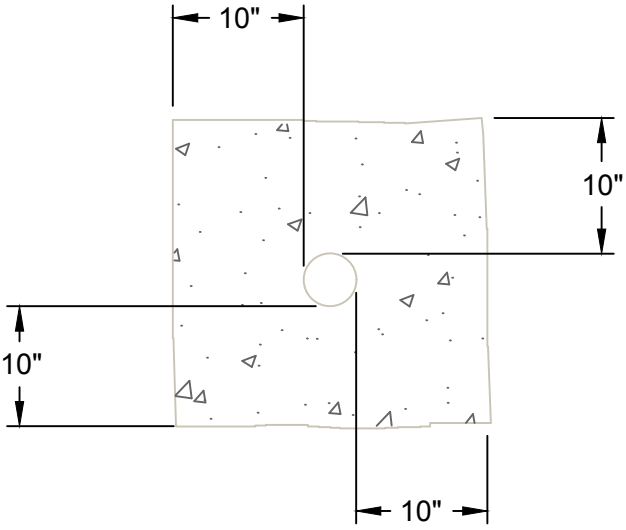
REV	A	DATE	07/09/2020	REVISION	ISSUE FOR CONSTRUCTION	BY	RWC	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

CONDUIT INSTALLATION ON SLOPE GREATER THAN 25% (ALTERNATIVE)

drawn:	approved:	date:	510-027
RWC	MMG	07/09/2020	





SECTION A-A

NOTE: REFER TO APPROPRIATE DRAWINGS FOR CORRECT EMBEDMENT DEPTH.

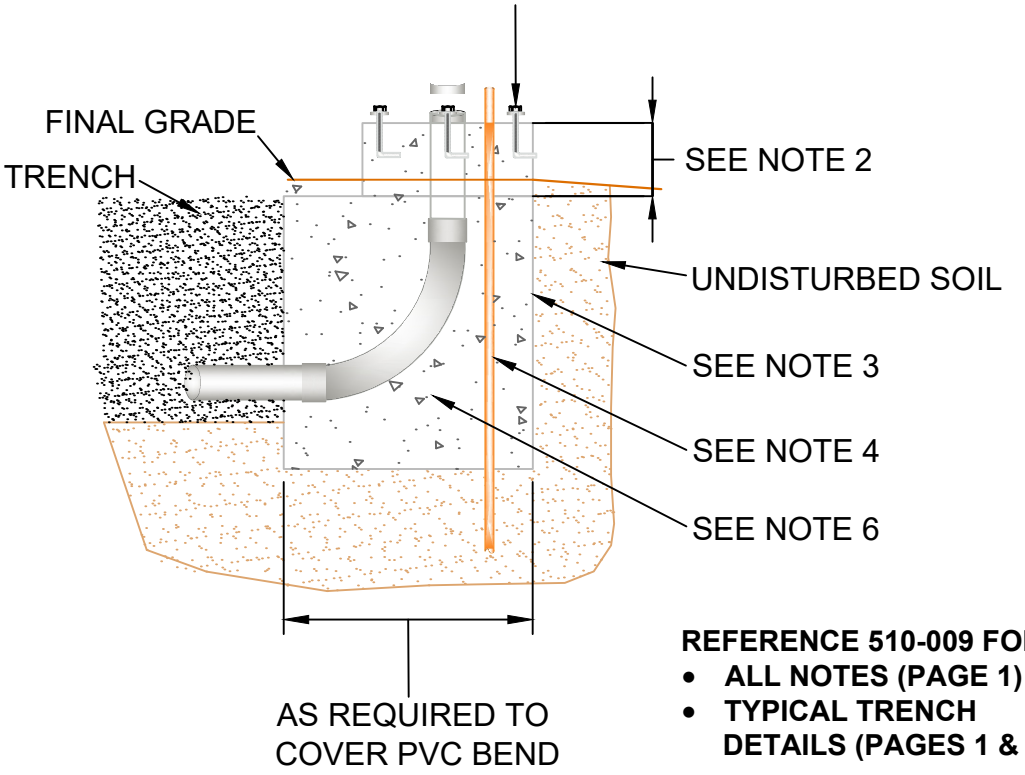
REV	A	DATE	07/09/2020	REVISION	ISSUE FOR CONSTRUCTION	BY	RWC	CHK	SSS	APR	MMG

UNDERGROUND
INSTALLATION
SPECIFICATIONS

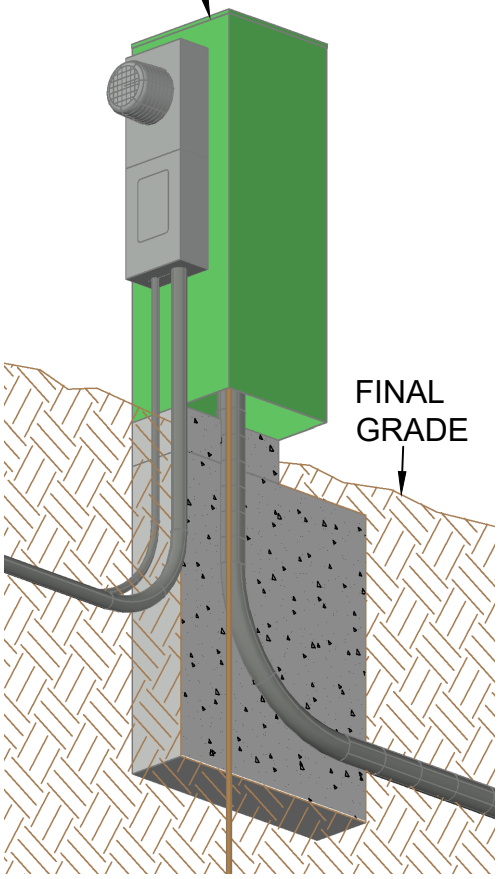
CONDUIT INSTALLATION IN FLOOD-PRONE AREAS

drawn:	approved:	date:	510-029
RWC	MMG	07/09/2020	

3/8" X 4" GALVANIZED "L" BOLTS WITH NUTS AND 1" WASHERS. BOLTS TO BE 1" ABOVE CONCRETE WITH CLEAN THREADS. DROP-IN ANCHORS TO BE DRILLED AND SET AFTER POUR. **SEE INSPECTOR FOR BOLT LOCATION TEMPLATE.**

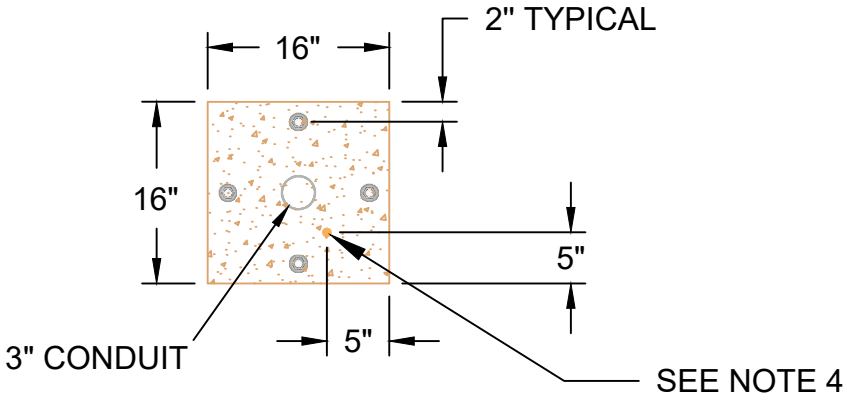


PEDESTAL METER COMBINATION



REFERENCE 510-009 FOR:

- **ALL NOTES (PAGE 1)**
- **TYPICAL TRENCH DETAILS (PAGES 1 & 2)**



REV	C	DATE	6/9/2025	REVISION	UPDATED 510-009 REFERENCE NOTE	BY	SSS	CHK	SSS	APR	MMG

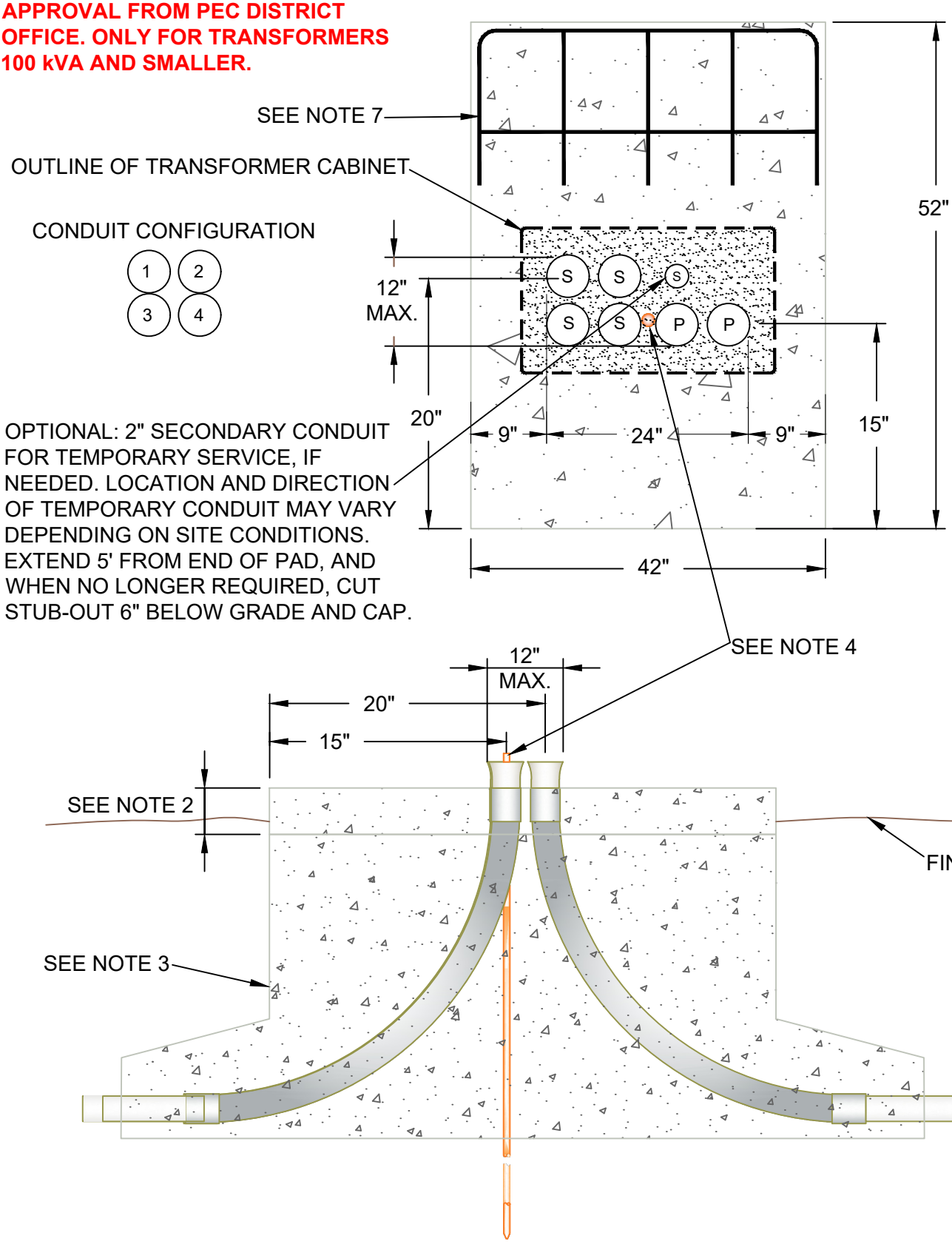
UNDERGROUND INSTALLATION SPECIFICATIONS

PAD FOR SERVICE METER PEDESTAL

drawn:	approved:	date:	520-010
SSS	MMG	6/9/2025	

52" PAD OPTION IS FOR COMPACT INSTALLATIONS AND MUST HAVE APPROVAL FROM PEC DISTRICT OFFICE. ONLY FOR TRANSFORMERS 100 kVA AND SMALLER.

REFERENCE PAGE 1 OF 510-009 FOR ALL NOTES



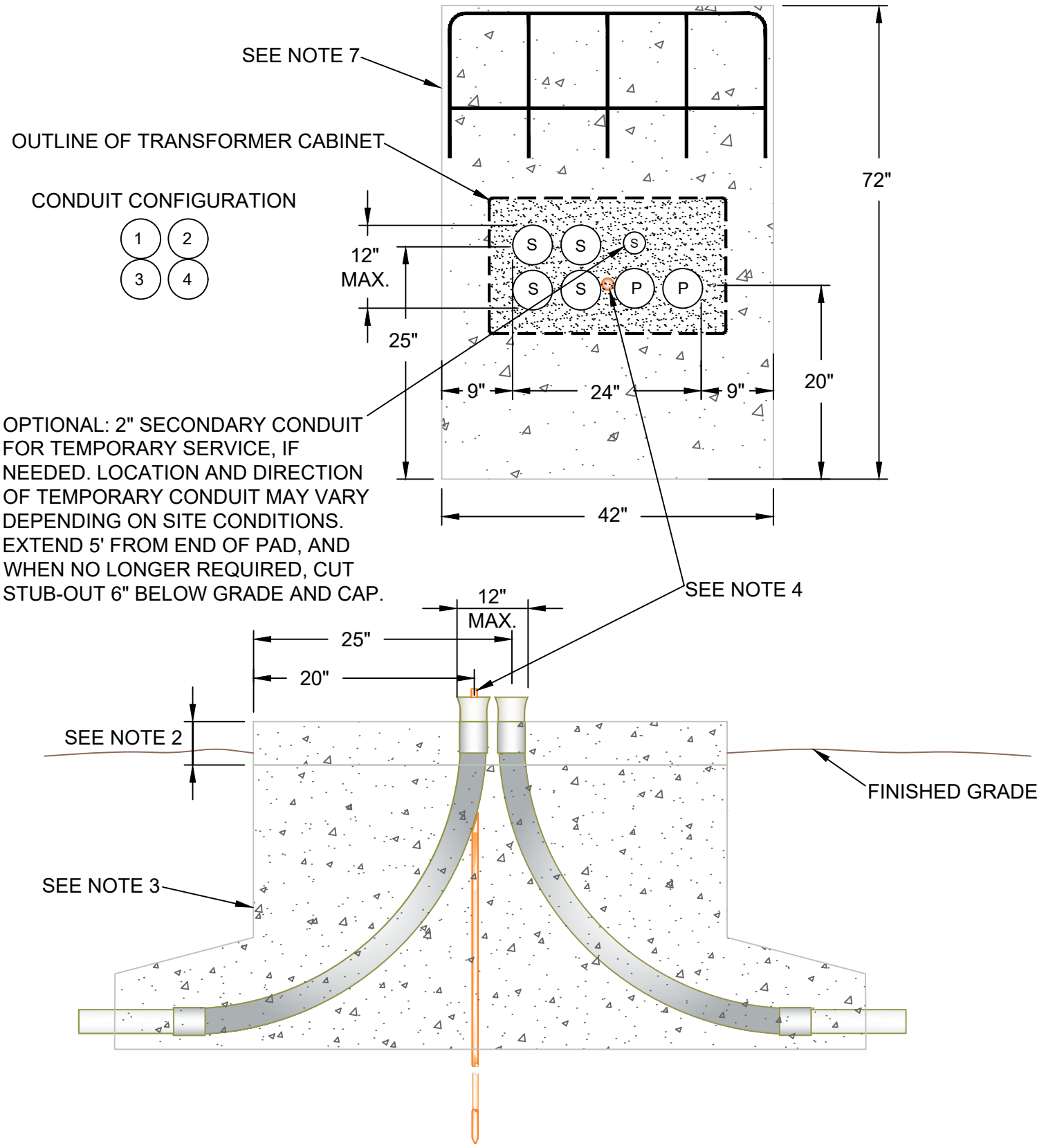
REV	B	DATE	11/13/2024	REVISION	REDRAWN FOR CLARITY, ADDED 2" FOR TEMP. SERVICE	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

52" PAD FOR 1Ø TRANSFORMER WITH VFI, SMALL SECTIONALIZING ENCLOSURE

drawn:	approved:	date:	
AMJ	MMG	11/13/2024	520-020

REFERENCE PAGE 1 OF 510-009 FOR ALL NOTES



REV	D	DATE	11/13/2024	REVISION	REDRAWN FOR CLARITY, ADDED 2" FOR TEMP. SERVICE	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

72" PAD FOR 1Ø TRANSFORMER WITH VFI, SMALL SECTIONALIZING ENCLOSURE

drawn:	approved:	date:	
AMJ	MMG	11/13/2024	520-030

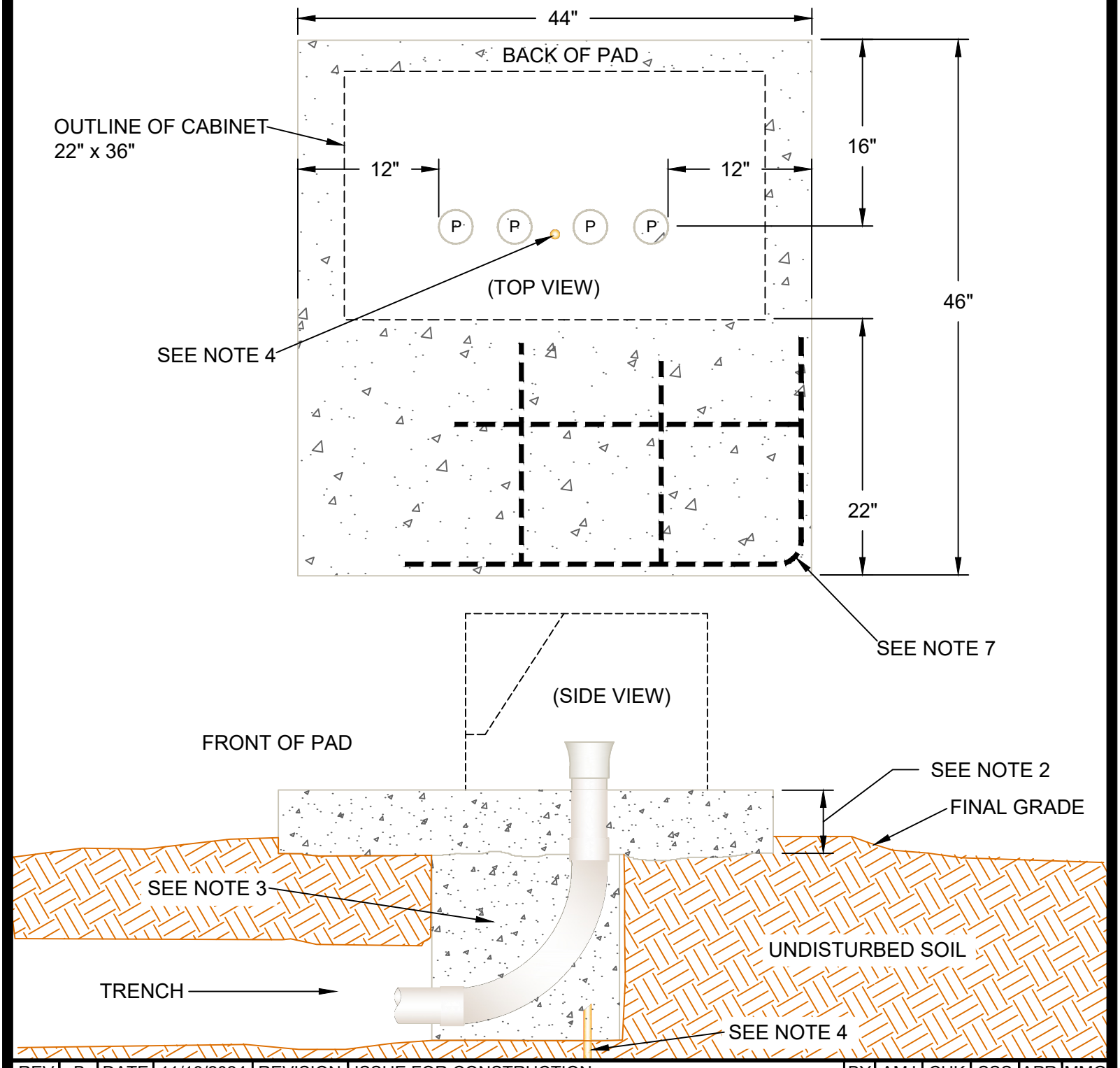
APPROVED SECTIONALIZING ENCLOSURES:

- MAYSTEEL-HUBBELL CC336-22TH
- DURHAM 1008823
- ALUMA-FORM ENC-SC1-303622-S2-G-JJA
- AMERICAN PADMOUNT SYSTEMS APS-14S303622-N

APPROVED ALUMINUM SECTIONALIZING ENCLOSURES:

- ALUMA-FORM ENC-SC1-303622-A2-G-JJA
- AMERICAN PADMOUNT SYSTEMS ABS303623-N

REFERENCE PAGE 1 OF 510-009 FOR ALL NOTES



REV	B	DATE	11/13/2024	REVISION	ISSUE FOR CONSTRUCTION	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

SMALL PAD FOR 1Ø SECTIONALIZING ENCLOSURE

drawn:	approved:	date:	530-010
AMJ	MMG	11/13/2024	

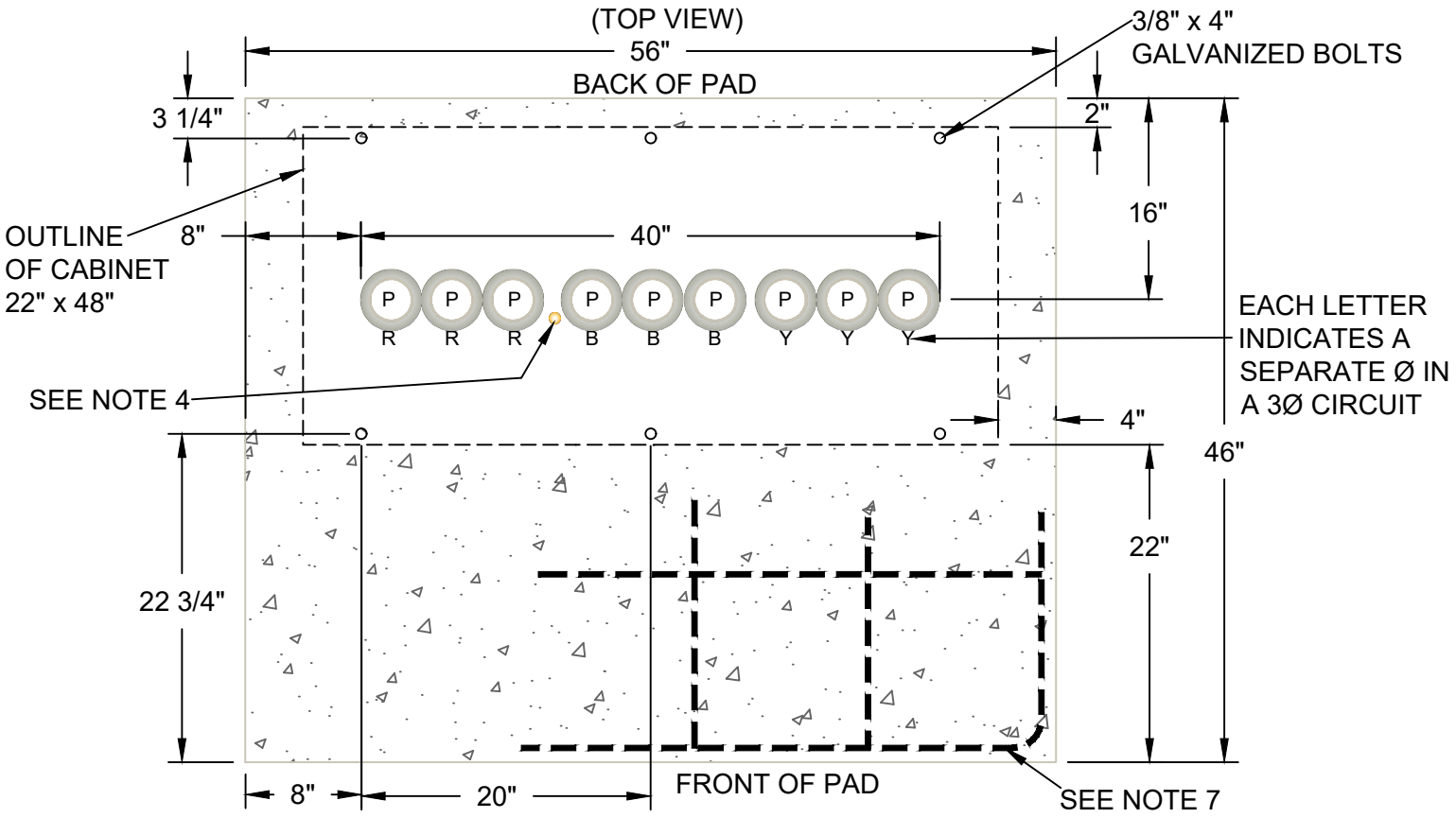
APPROVED SECTIONALIZING ENCLOSURES:

- DURHAM 1010188A
- MAYSTEEL-HUBBELL CC348-22TH
- HUBBELL-CMC BGSSE224830TP
- ABB MEH304823
- ALUMA-FORM ENC-SC3-304822-S2-G-JJA
- AMERICAN PADMOUNT SYSTEMS APS-14S304822-UUU

APPROVED ALUMINUM SECTIONALIZING ENCLOSURES:

- ALUMA-FORM ENC-SC3-304822-A2-G-JJA
- AMERICAN PADMOUNT SYSTEMS APS304822-UUU

REFERENCE PAGE 1 OF 510-009 FOR ALL NOTES



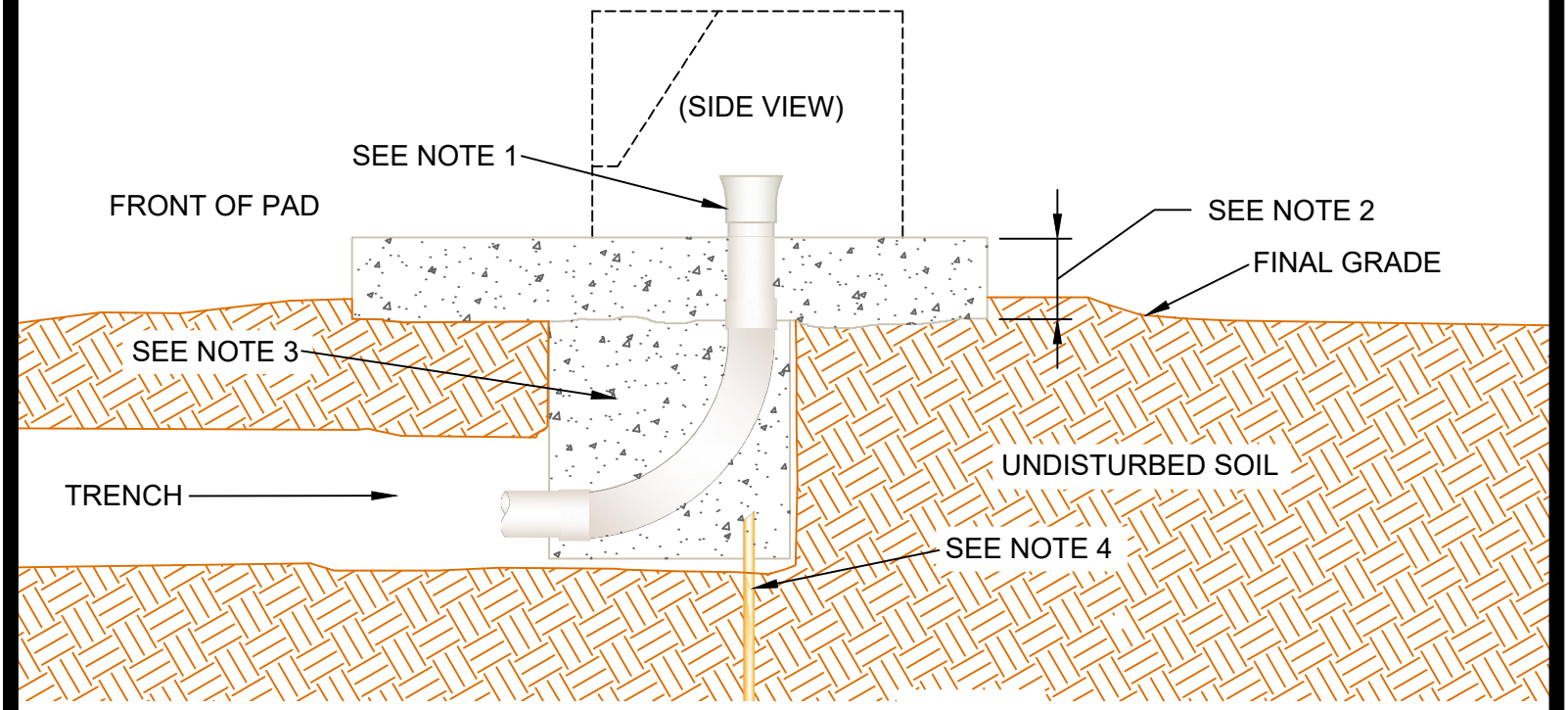
REV	B	DATE	1/15/2025	REVISION	MANUFACTURER BARFIELD-HUBBELL TO HUBBELL-CMC	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

SMALL PAD FOR 3Ø SECTIONALIZING ENCLOSURE
PAGE 1 OF 2

drawn:	approved:	date:	530-020
AMJ	MMG	1/15/2025	

REFERENCE PAGE 1 OF
510-009 FOR ALL NOTES



REV	B	DATE	1/15/2025	REVISION	MANUFACTURER BARFIELD-HUBBELL TO HUBBELL-CMC	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND
INSTALLATION
SPECIFICATIONS

SMALL PAD FOR
3Ø SECTIONALIZING ENCLOSURE
PAGE 2 OF 2

drawn:	approved:	date:	530-020
AMJ	MMG	1/15/2025	

APPROVED SECTIONALIZING ENCLOSURES:

- MAYSTEEL-HUBBELL CC366-22TH
- DURHAM AM30662263
- HUBBELL-CMC BGSSE226630TP-H

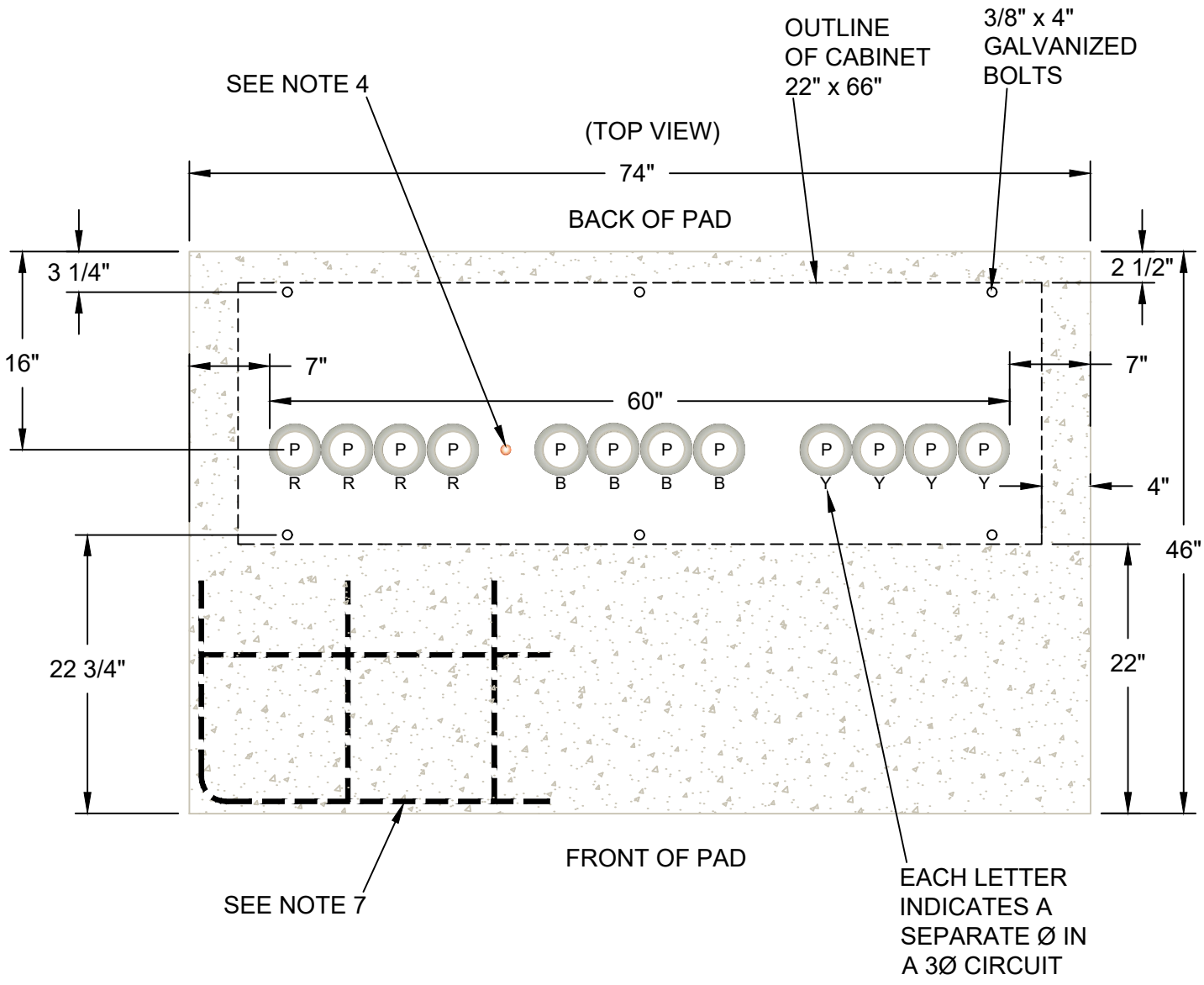
APPROVED SECTIONALIZING ENCLOSURES WITH 18" SPACER:

- DURHAM 1010868
- HUBBELL-CMC BGSSE226630TP-H WITH 18" RISER.

APPROVED ALUMINUM SECTIONALIZING ENCLOSURES:

- ALUMA-FORM ENC-SC3-306622-A2-G-JJA
- AMERICAN PADMOUNT SYSTEMS APS306723-ACACACA

REFERENCE PAGE 1 OF 510-009 FOR ALL NOTES



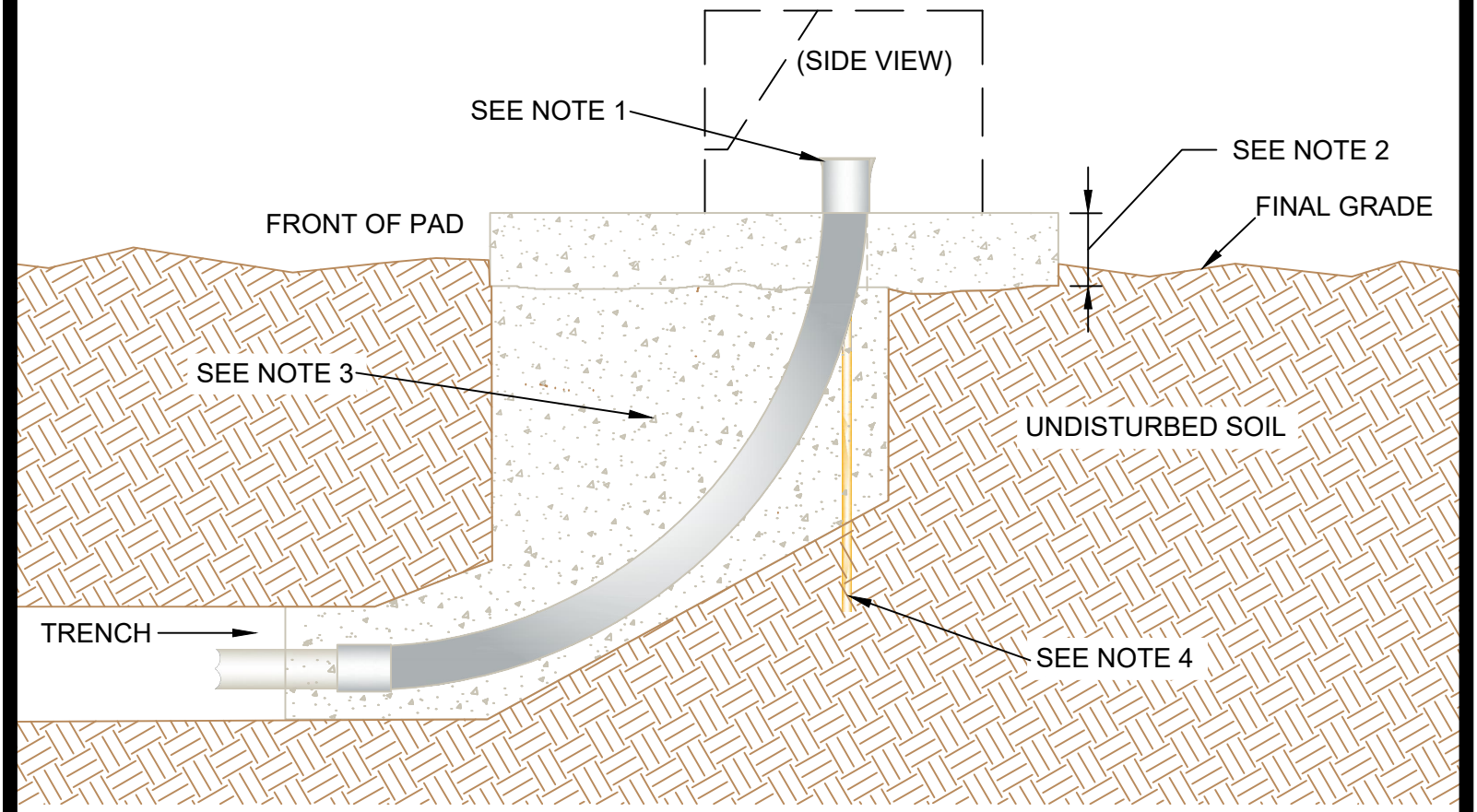
REV	B	DATE	1/15/2025	REVISION	MANUFACTURER BARFIELD-HUBBELL TO HUBBELL-CMC	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

LARGE PAD FOR 3Ø SECTIONALIZING ENCLOSURE
PAGE 1 OF 2

drawn:	approved:	date:	530-022
AMJ	MMG	1/15/2025	

REFERENCE PAGE 1 OF
510-009 FOR ALL NOTES



REV	B	DATE	1/15/2025	REVISION	MANUFACTURER BARFIELD-HUBBELL TO HUBBELL-CMC	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND
INSTALLATION
SPECIFICATIONS

LARGE PAD FOR
3Ø SECTIONALIZING ENCLOSURE
PAGE 2 OF 2

drawn:	approved:	date:	530-022
AMJ	MMG	1/15/2025	

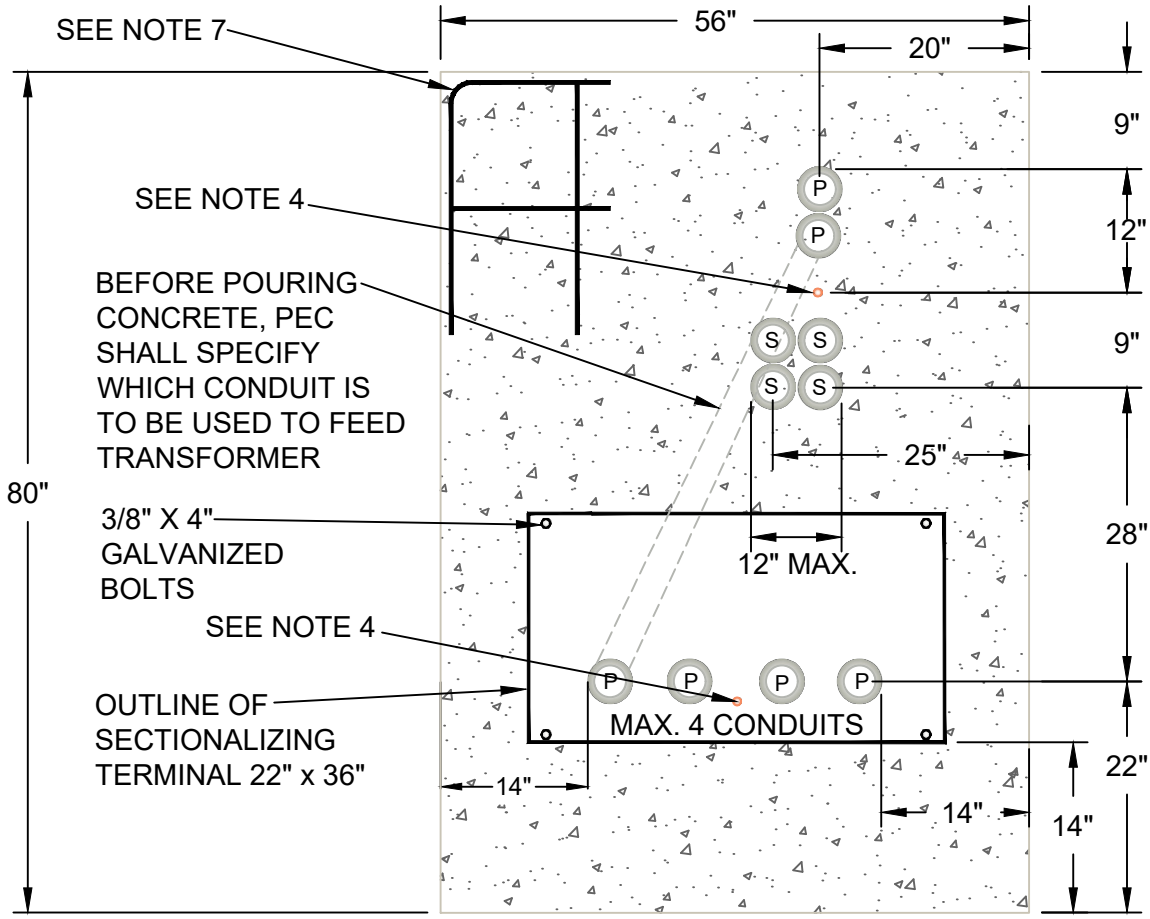
APPROVED SECTIONALIZING ENCLOSURES:

- MAYSTEEL-HUBBELL CC336-22TH
- DURHAM 1008823
- ALUMA-FORM ENC-SC1-303622-S2-G-JJA
- AMERICAN PADMOUNT SYSTEMS APS-14S303622-N

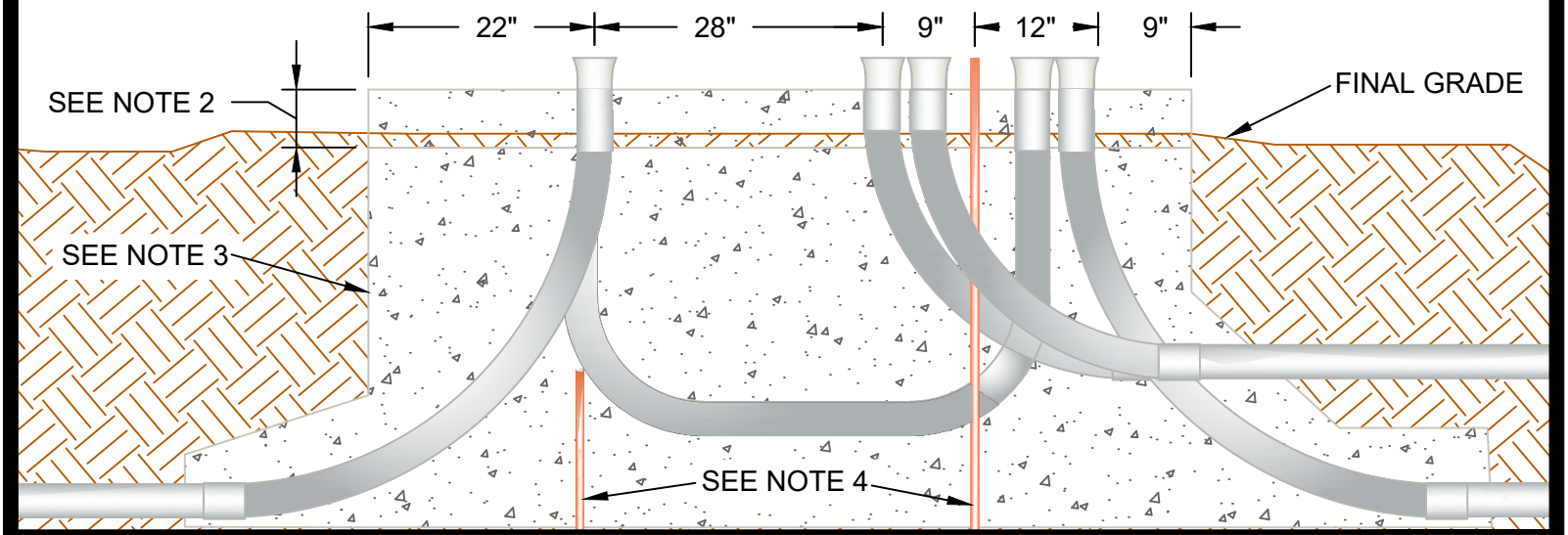
APPROVED ALUMINUM SECTIONALIZING ENCLOSURES:

- ALUMA-FORM ENC-SC1-303622-A2-G-JJA
- AMERICAN PADMOUNT SYSTEMS ABS303623-N

REFERENCE PAGE 1 OF 510-009 FOR ALL NOTES



CONDUIT CONFIGURATION



REV	DATE	REVISION	BY	CHK	APR
C	11/13/2024	ADDED ALUMINUM SECTIONALIZERS	AMJ	SSS	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

1Ø COMBINATION SECTIONALIZING ENCLOSURE AND TRANSFORMER PAD

drawn:	approved:	date:	
AMJ	MMG	11/13/2024	530-023

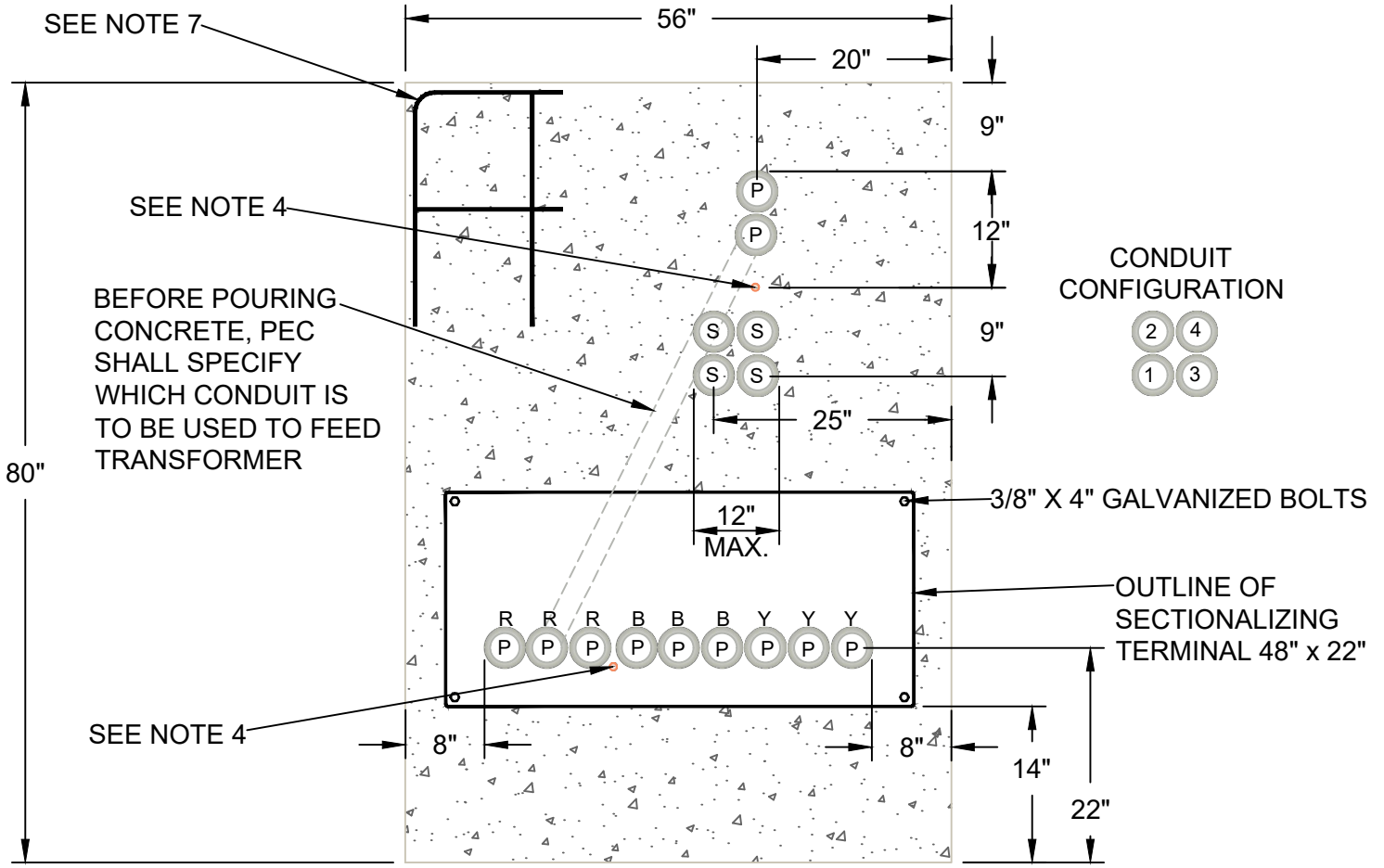
APPROVED SECTIONALIZING ENCLOSURES:

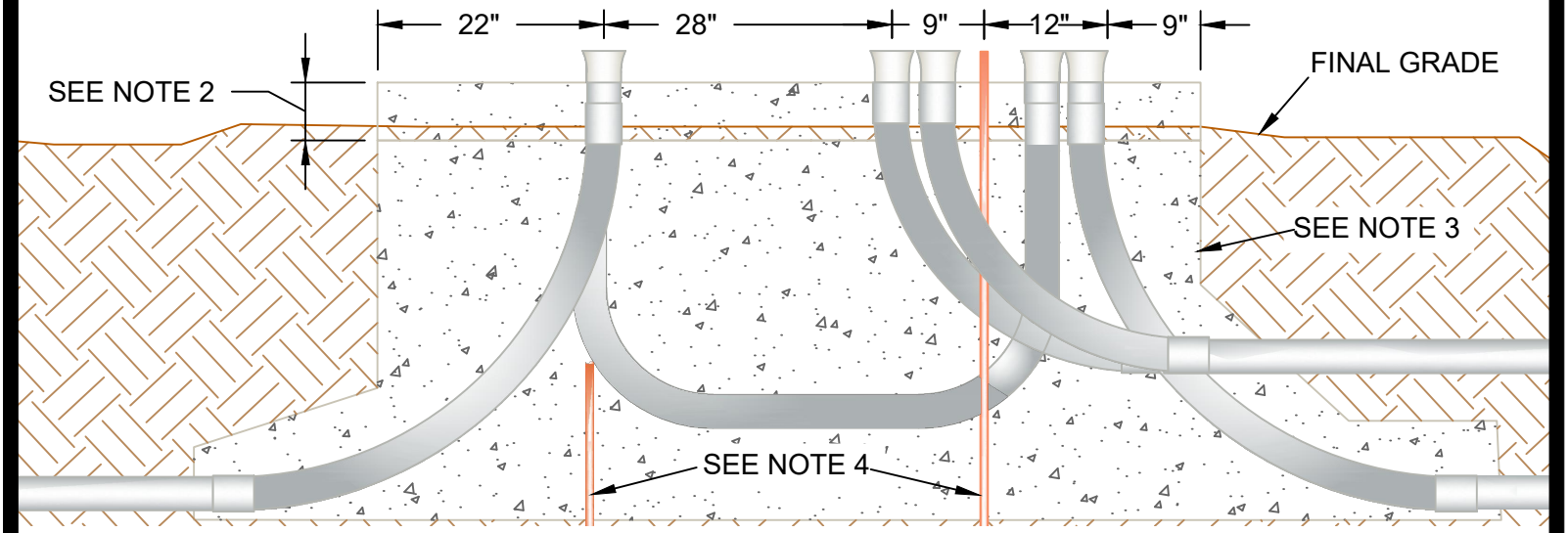
- DURHAM 1010188A
- MAYSTEEL-HUBBELL CC348-22TH
- HUBBELL-CMC BGSSE224830TP
- ABB MEH304823
- ALUMA-FORM ENC-SC3-304822-S2-G-JJA
- AMERICAN PADMOUNT SYSTEMS APS-14S304822-UUU

APPROVED ALUMINUM SECTIONALIZING ENCLOSURES:

- ALUMA-FORM ENC-SC3-304822-A2-G-JJA
- AMERICAN PADMOUNT SYSTEMS APS304822-UUU

REFERENCE PAGE 1 OF 510-009 FOR ALL NOTES





REV	C	DATE	1/15/2025	REVISION	MANUFACTURER BARFIELD-HUBBELL TO HUBBELL-CMC	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

SMALL COMBINATION SECTIONALIZING ENCLOSURE AND TRANSFORMER PAD

drawn:	approved:	date:	530-024
AMJ	MMG	1/15/2025	

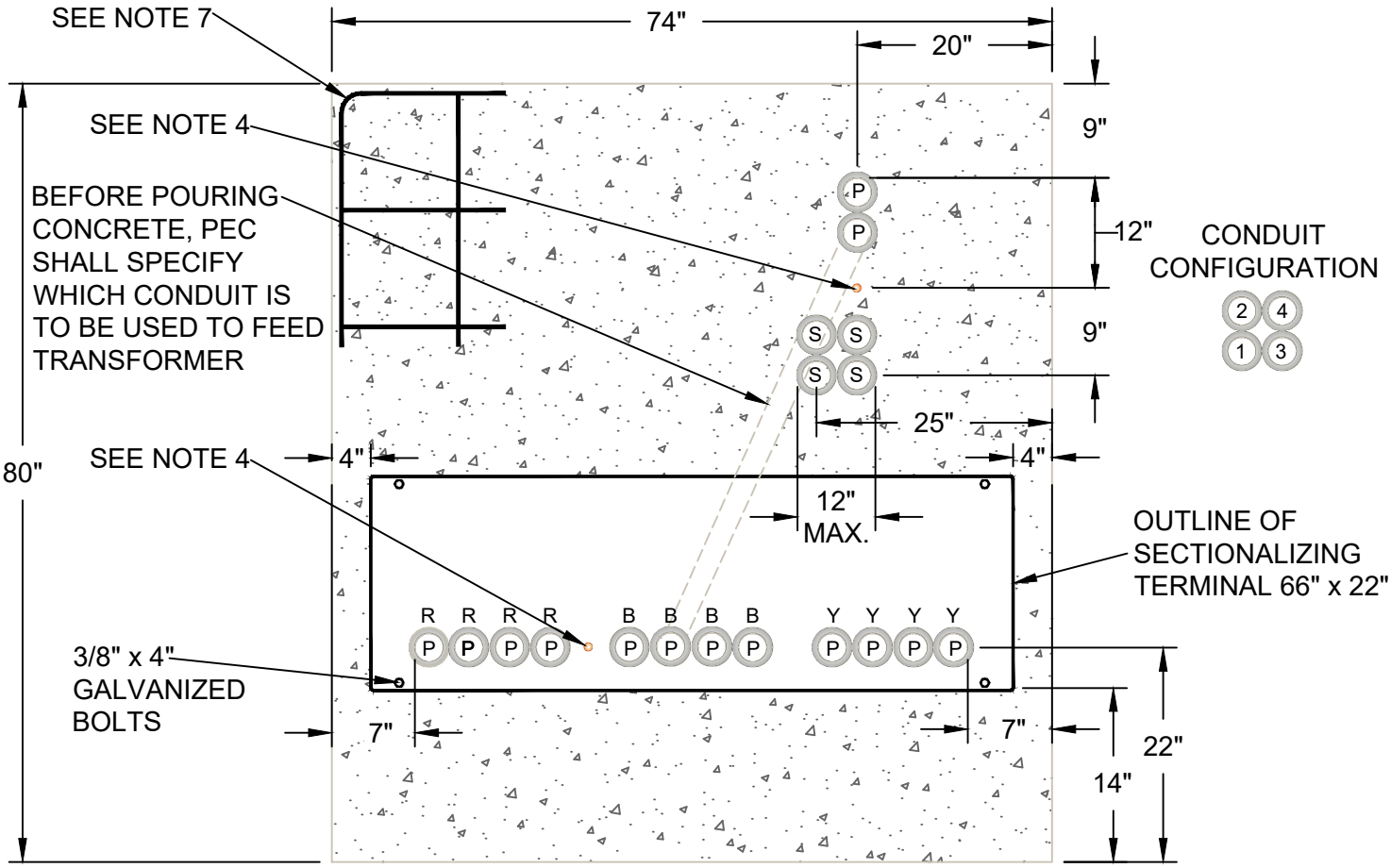
APPROVED SECTIONALIZING ENCLOSURES:

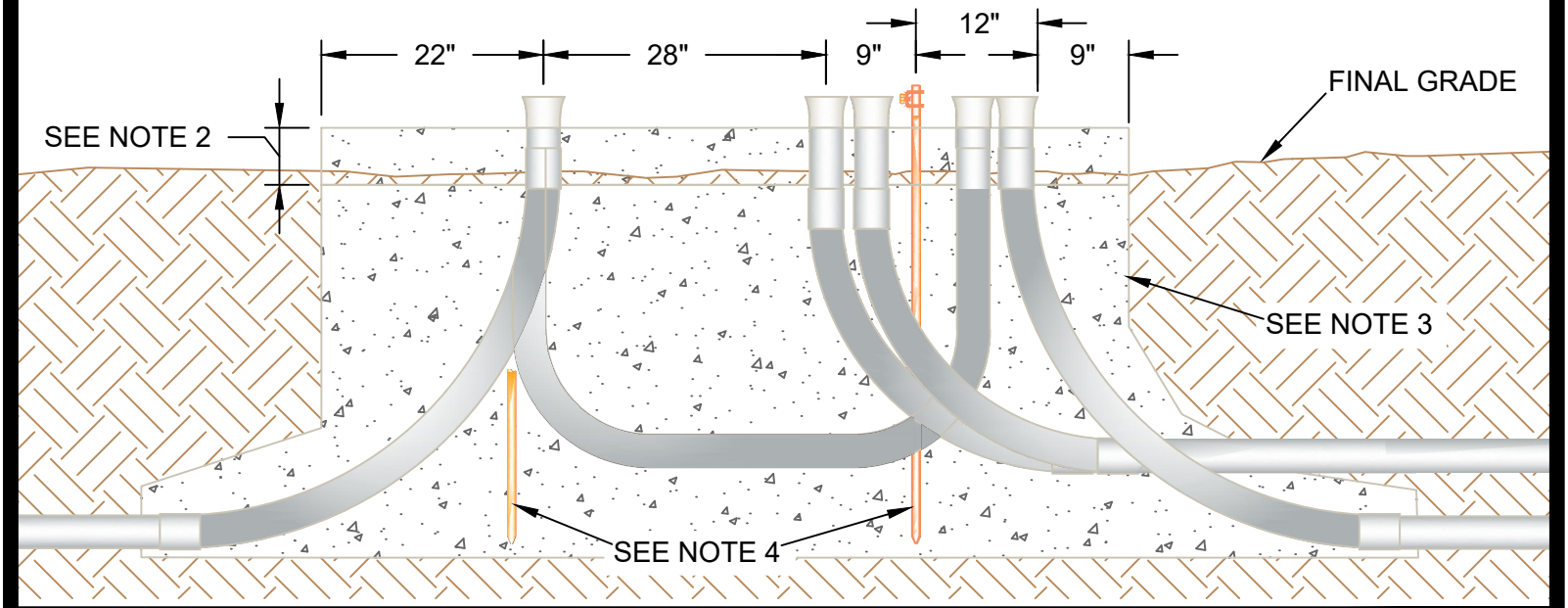
- MAYSTEEL-HUBBELL CC366-22TH
- DURHAM AM30662263
- HUBBELL-CMC BGSSE226630TP-H
- ALUMA-FORM ENC-SC3-306622-S2-G-JJA

APPROVED ALUMINUM SECTIONALIZING ENCLOSURES:

- ALUMA-FORM ENC-SC3-306622-A2-G-JJA
- AMERICAN PADMOUNT SYSTEMS APS306723-ACACACA

REFERENCE PAGE 1 OF 510-009 FOR ALL NOTES





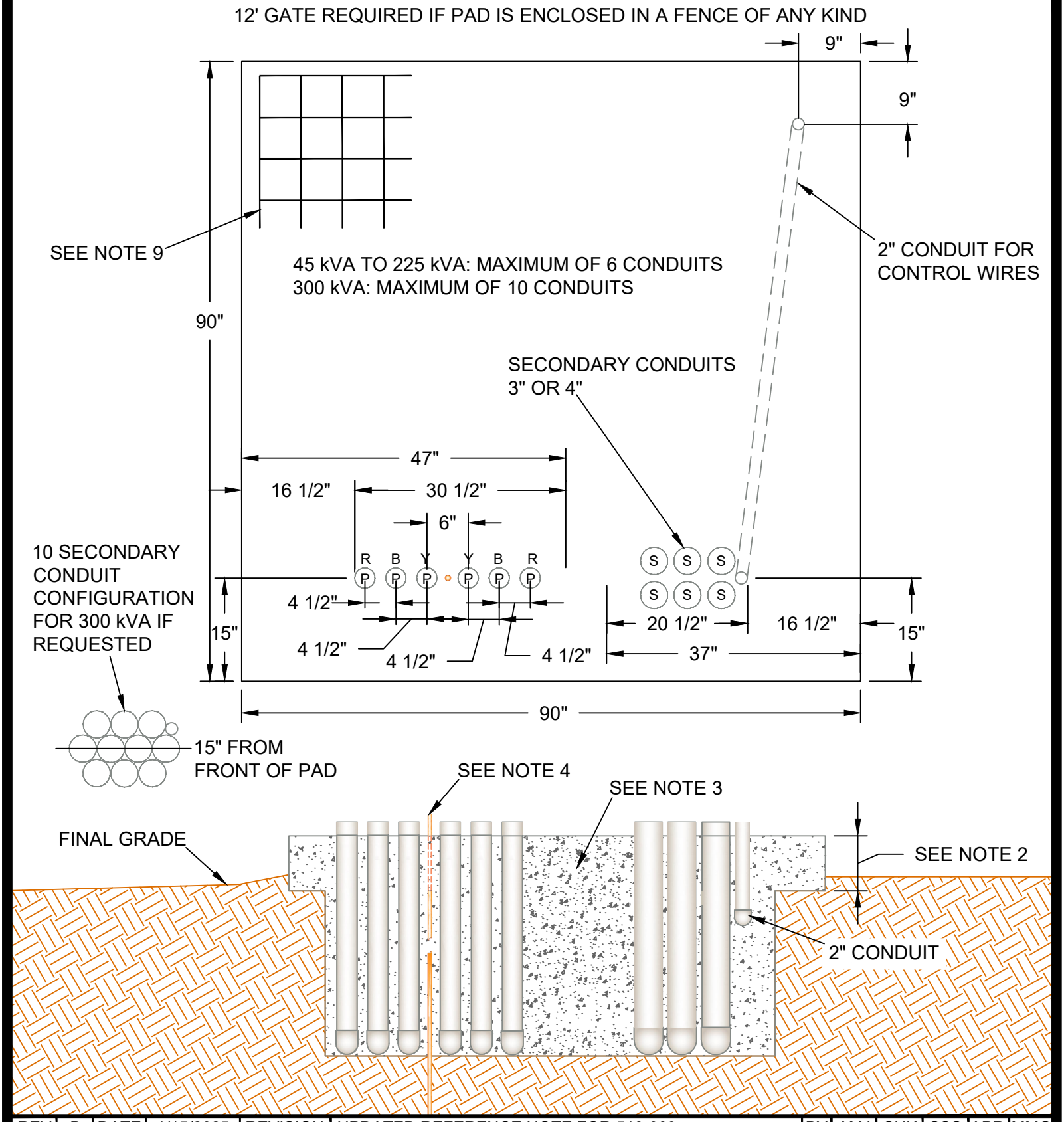
REV	C	DATE	1/15/2025	REVISION	MANUFACTURER BARFIELD-HUBBELL TO HUBBELL-CMC	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

LARGE COMBINATION SECTIONALIZING ENCLOSURE AND TRANSFORMER PAD

drawn:	approved:	date:	530-026
AMJ	MMG	1/15/2025	

REFERENCE PAGE 1 OF 510-009 FOR ALL NOTES



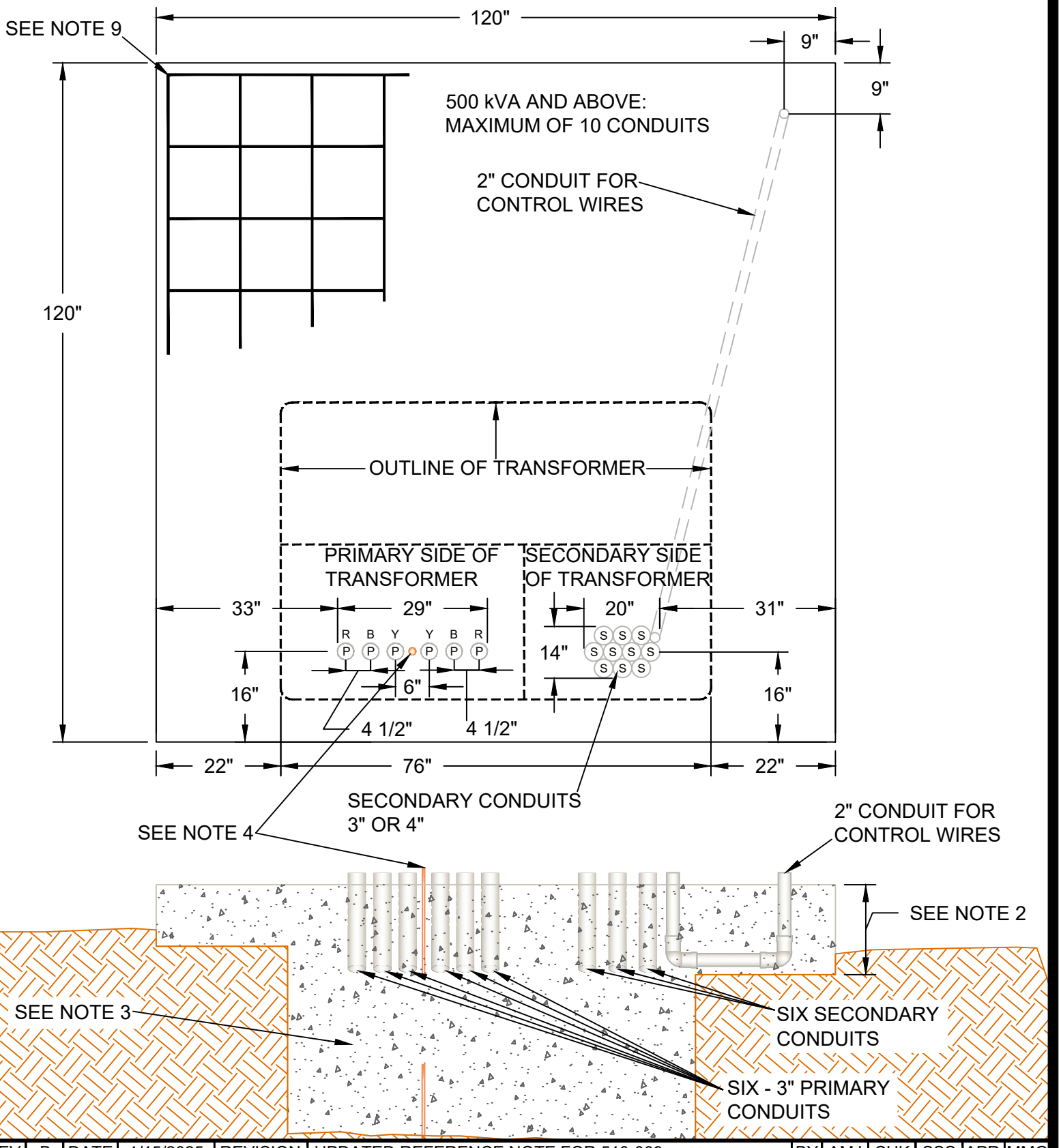
REV	B	DATE	1/15/2025	REVISION	UPDATED REFERENCE NOTE FOR 510-009	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

3Ø TRANSFORMER PAD
45-300 kVA

drawn:	approved:	date:	530-030
AMJ	MMG	1/15/2025	

12' GATE REQUIRED IF PAD IS ENCLOSED IN A FENCE OF ANY KIND



REV	B	DATE	1/15/2025	REVISION	UPDATED REFERENCE NOTE FOR 510-009	BY	AMJ	CHK	SSS	APR	MMG

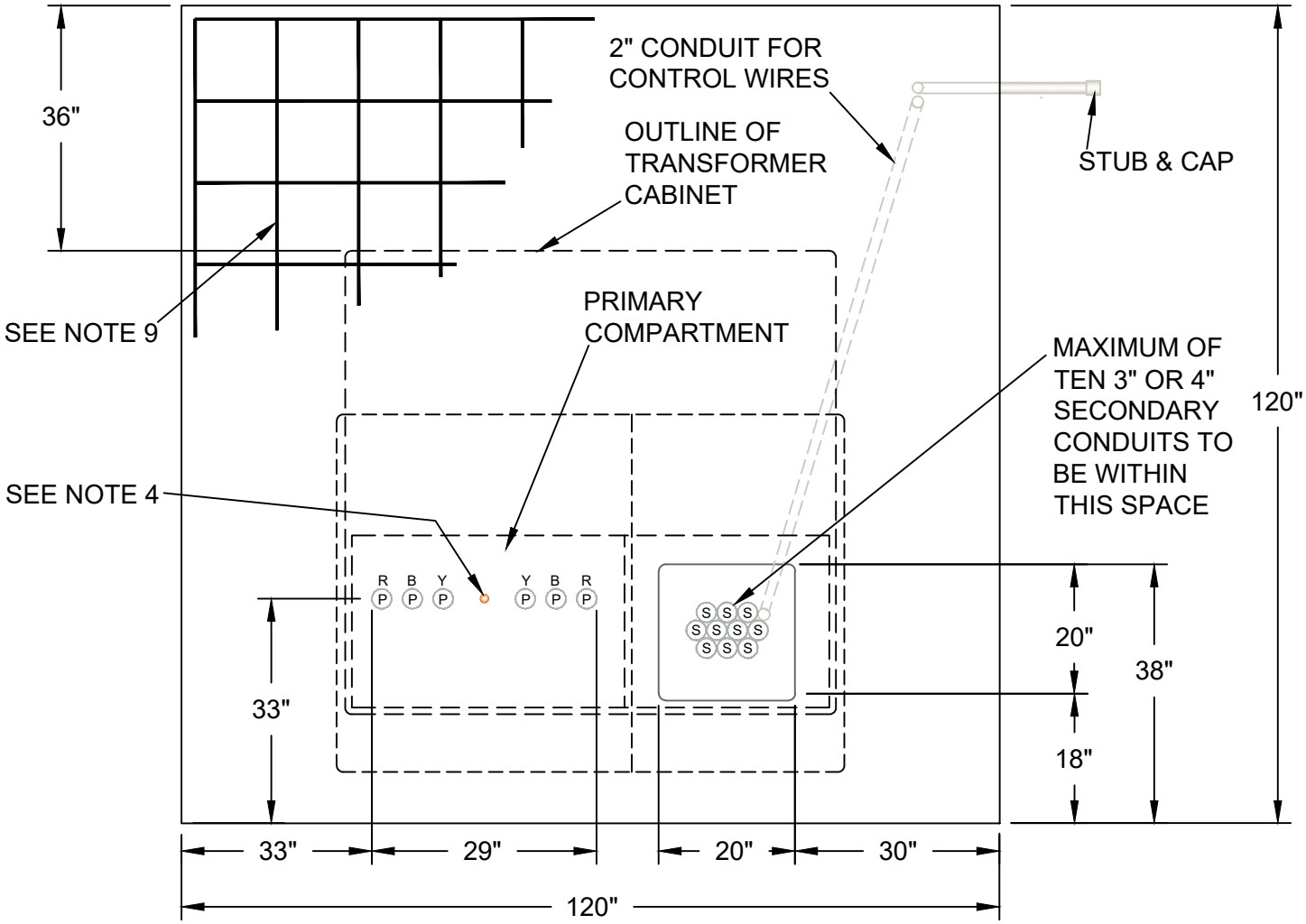
UNDERGROUND
INSTALLATION
SPECIFICATIONS

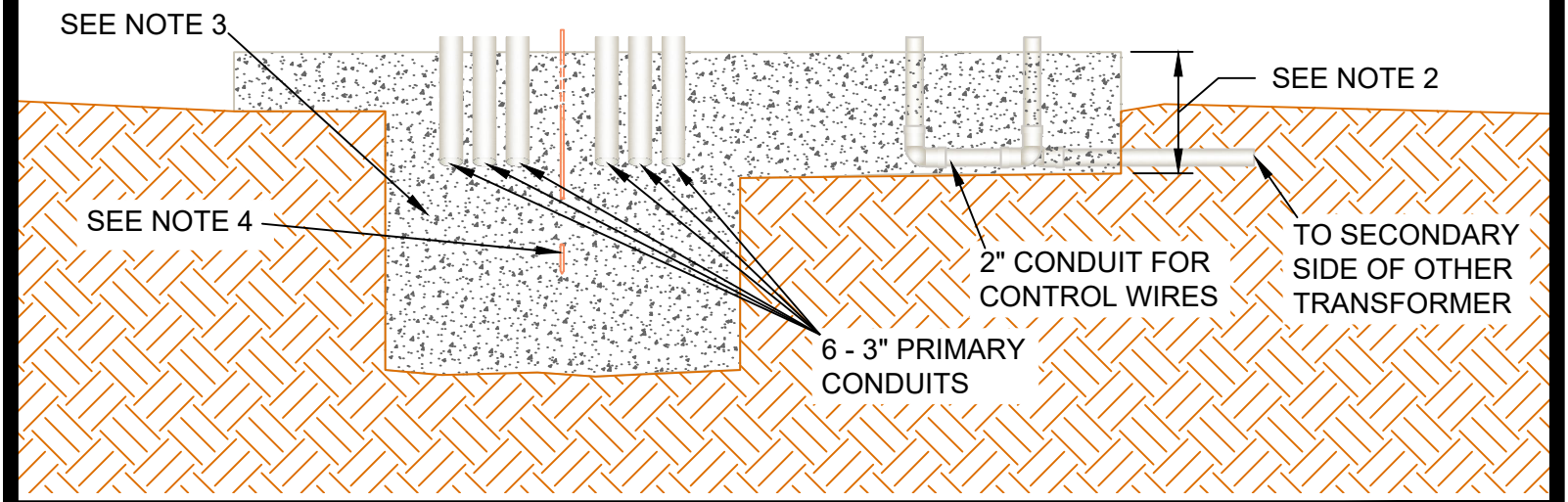
3Ø TRANSFORMER PAD
500-1500 kVA

drawn:	approved:	date:	530-032
AMJ	MMG	1/15/2025	

REFERENCE PAGE 1 OF
510-009 FOR ALL NOTES

12' GATE REQUIRED IF PAD ENCLOSED IN FENCE OF ANY KIND.
GROUND IN FRONT OF PAD-MOUNTED EQUIPMENT SHALL NOT HAVE A SLOPE OF MORE THAN 6" IN 10'.





REV	B	DATE	11/13/2024	REVISION	Y B R WAS R B Y	BY	AMJ	CHK	SSS	APR	MMG

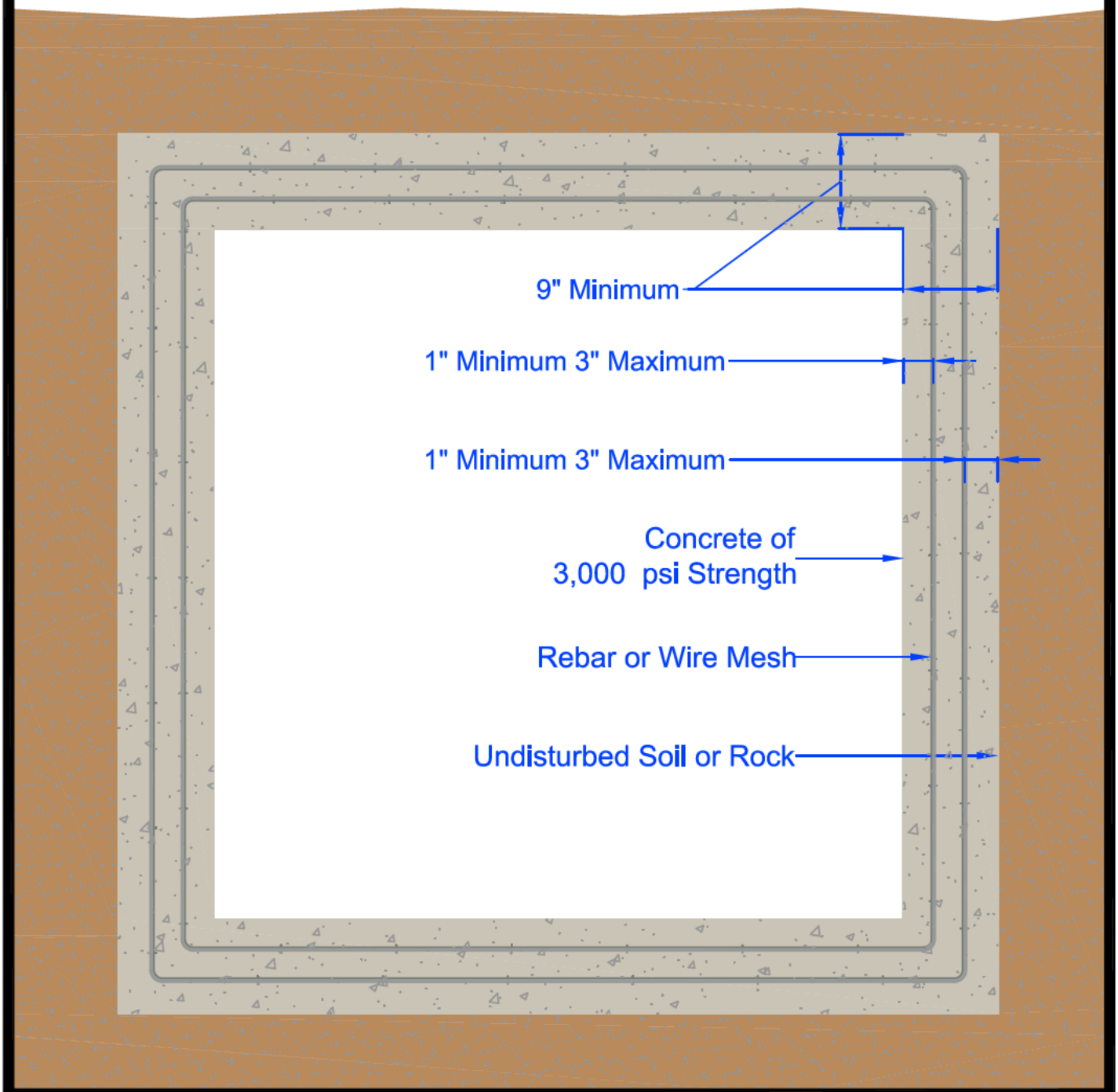
UNDERGROUND INSTALLATION SPECIFICATIONS

3Ø TRANSFORMER PAD
2000-3000 kVA

drawn:	approved:	date:	530-034
AMJ	MMG	11/13/2024	

Notes:

1.) Concrete to be a minimum of 3,000 psi design strength.
2.) All walls to be a minimum of 9" thick.
3.) ⅜"steel rebar minimum spaced a maximum 12" apart..
4.) Footing to extend to undisturbed soil or rock.
5.) See individual vault drawings for actual dimensions.



PEDERNALES ELECTRIC COOPERATIVE, INC.

URD DEVELOPER'S SPECIFICATIONS

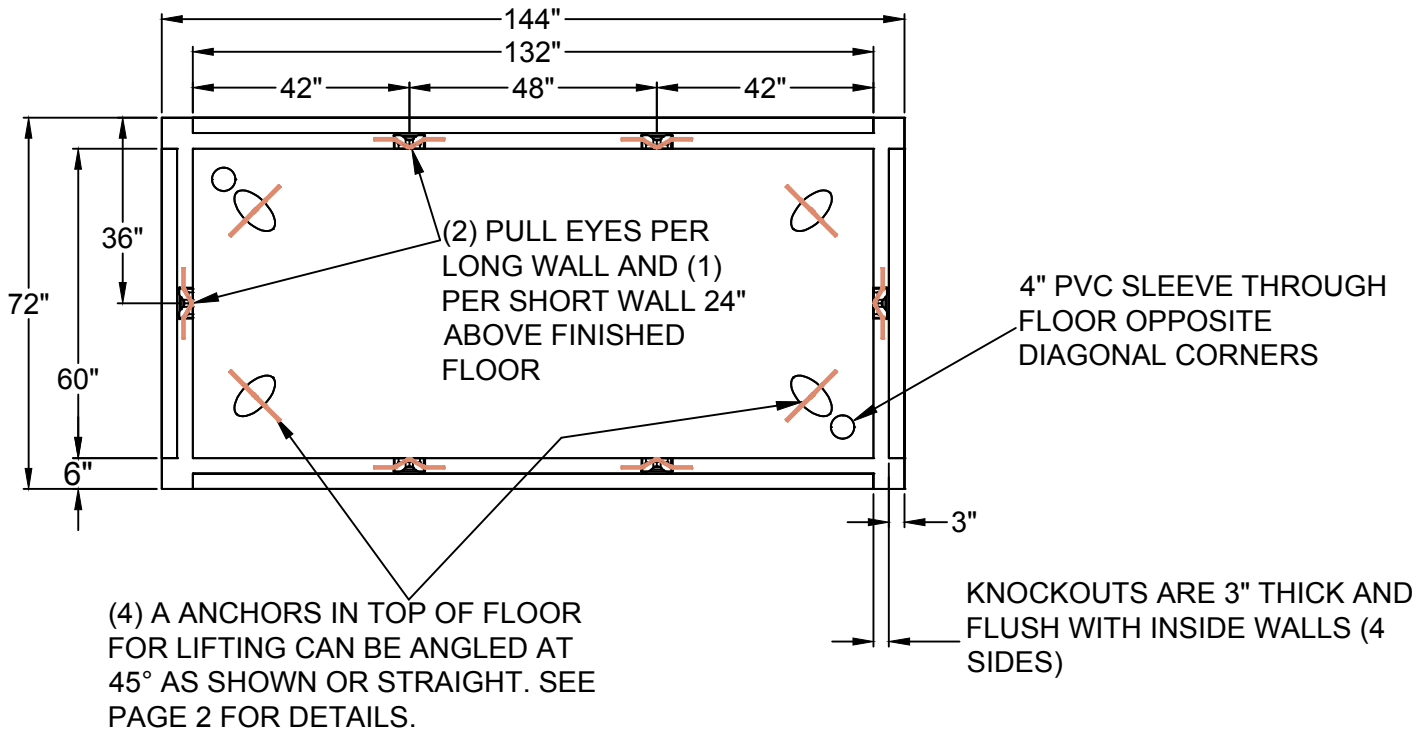
General Specifications for Poured in Place Vaults

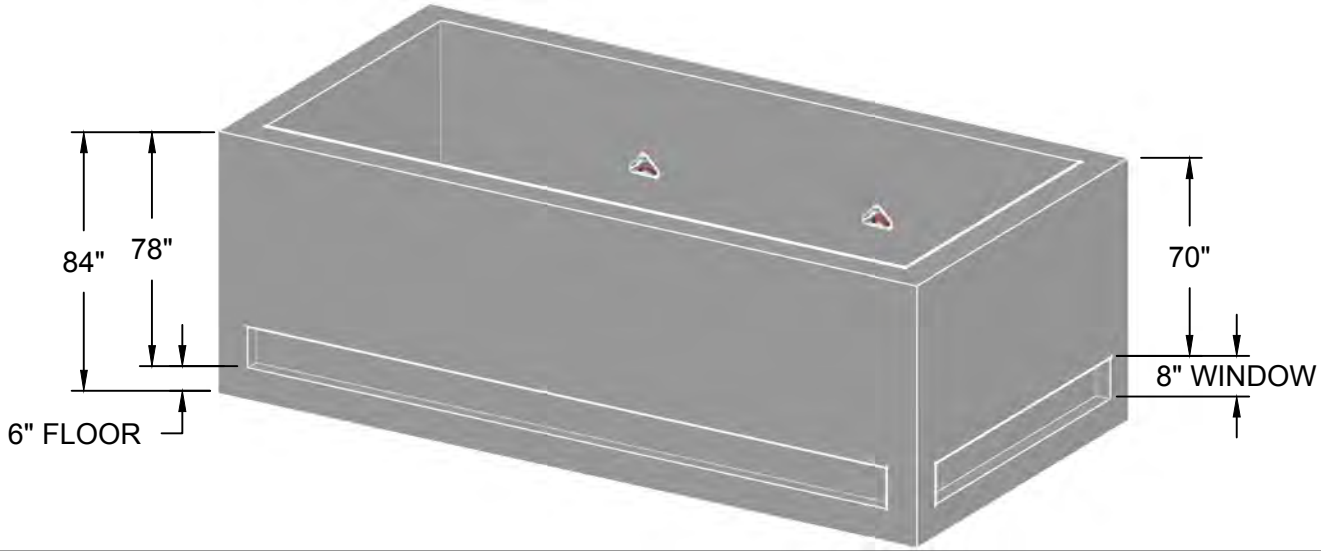
drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	530-040-0911

NOTES:

1) SHORT WALLS SHALL HAVE ONE PULLING EYE CENTERED AND AT 24" FROM THE BOTTOM OF THE VAULT. LONG WALLS SHALL HAVE TWO PULLING EYES LOCATED 48" APART, EVENLY SPACED BETWEEN INSIDE WALLS, AND 24" FROM THE BOTTOM OF THE VAULT.
2) ALL PULLING EYES SHALL BE RATED FOR A MINIMUM OF 5,000 POUNDS EACH.
3) 6" ABOVE THE BOTTOM OF THE VAULT, AN 8" KNOCKOUT SHALL EXTEND AROUND THE ENTIRE PERIMETER OF THE VAULT (EXCEPT FOR 6" FROM EACH CORNER) FOR CONDUIT TO BE BROUGHT IN. KNOCKOUTS SHOULD BE 3" THICK AND FLUSH WITH THE INSIDE OF THE VAULT. THE VAULT SHALL BE 7' DEEP.
4) THE VAULT SHALL BE INSTALLED ON A MINIMUM 6" DEEP BED OF 1/2" TO 3/4" DIAMETER GRAVEL.

(NOTES CONTINUED ON NEXT PAGE.)





REV	C	DATE	07/23/2020	REVISION	NOTE 5: 3/4" X 10' GROUND ROD WAS 8' GROUND ROD	BY	RWC	CHK	SSS	APR	MMG

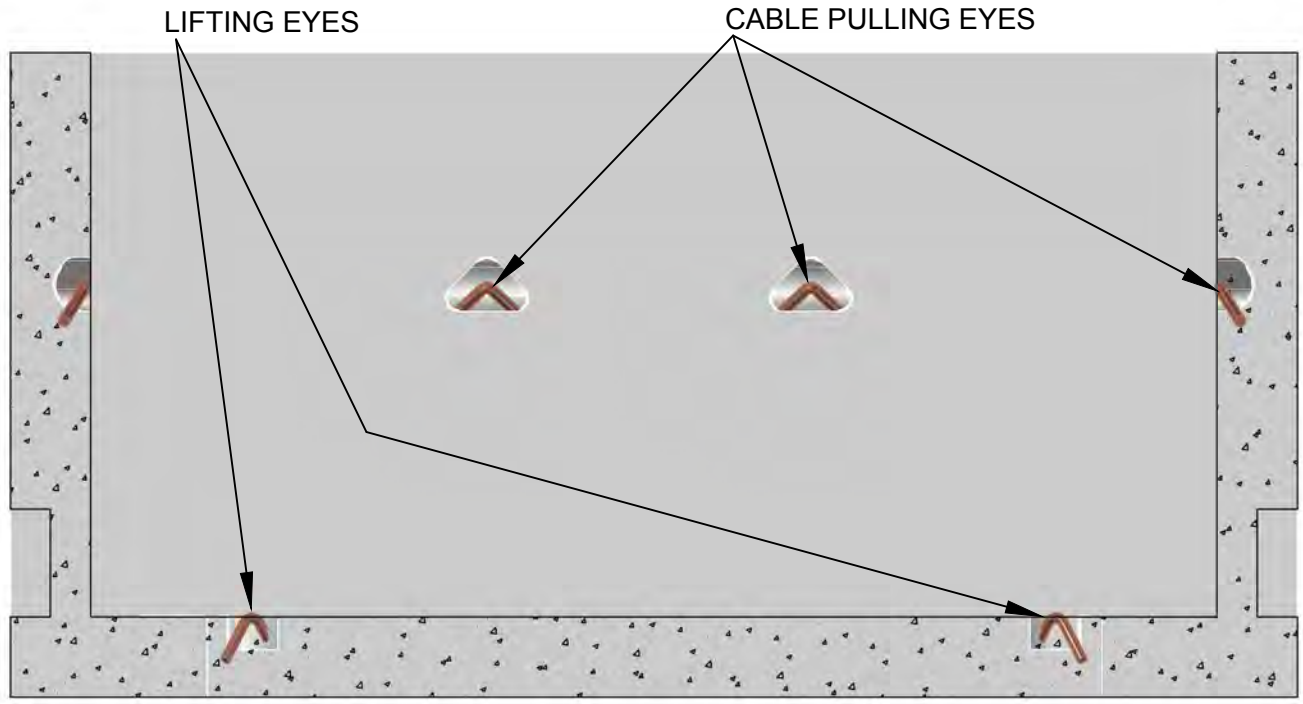
UNDERGROUND INSTALLATION SPECIFICATIONS

VAULT FOR SUBMERSIBLE SWITCHGEAR AND SPLICE BOX

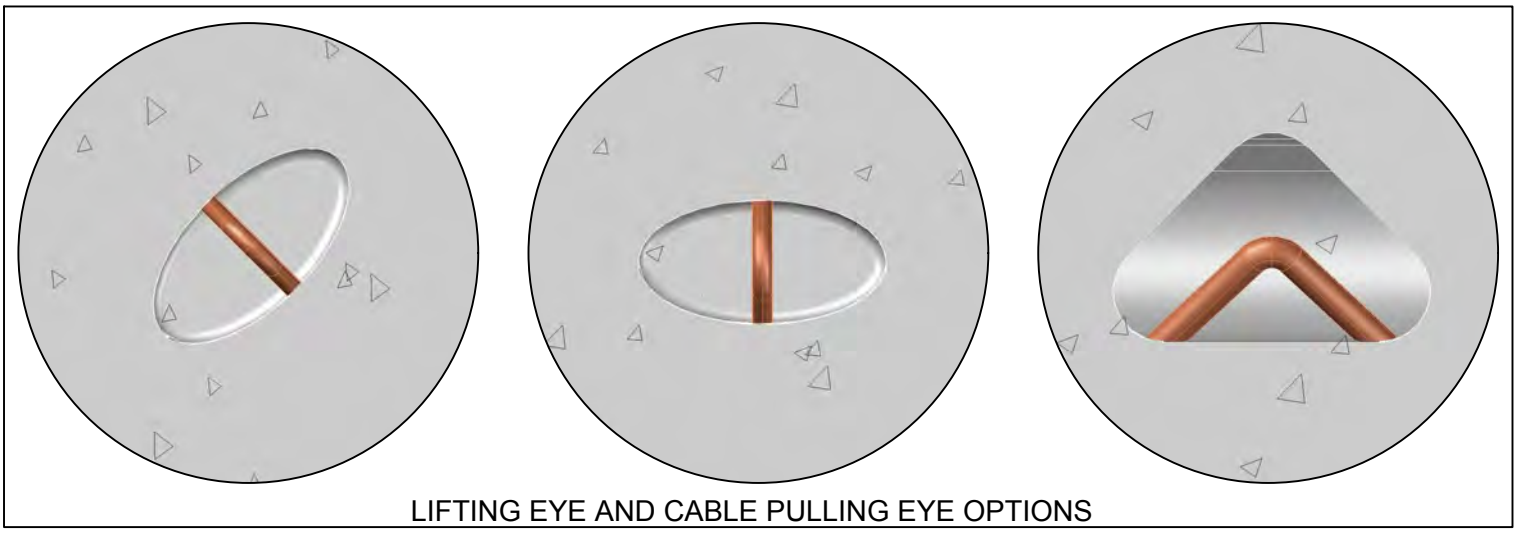
drawn:	approved:	date:	
RWC	MMG	07/23/2020	530-050

NOTES CONTINUED:

5) EACH VAULT SHALL BE SUPPLIED WITH EITHER A 3/4" X 10' GROUND ROD DRIVEN IN THE VAULT FLOOR OR A MINIMUM 100 FEET OF #6 BARE COPPER WIRE BURIED NO LESS THAN 18" DEEP IN THE EARTH AND MEETING THE NATIONAL ELECTRICAL SAFETY CODE RULE #094B3.
6) ALL CONCRETE TO HAVE 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60. BAR BENDING AND PLACEMENT SHALL COMPLY WITH LATEST ACI STANDARDS. DESIGN BASED ON AASHTO HS 20-44 LOADING.
7) LIFTING AND PULLING EYE SHAPES AND DIMENSIONS CAN VARY, SO LONG AS FORM, FIT AND FUNCTION ARE SATISFIED.
8) VAULT CAN BE MADE WITH NO BOTTOM. IT WILL BE 84" TALL, WITH 4 WALLS ON A BED OF 1/2" TO 3/4" DIAMETER GRAVEL.



SECTION THROUGH LIFTING EYES AND CABLE PULLING EYES



LIFTING EYE AND CABLE PULLING EYE OPTIONS

REV	C	DATE	07/23/2020	REVISION	NOTE 5: 3/4" X 10' GROUND ROD WAS 8' GROUND ROD	BY	RWC	CHK	SSS	APR	MMG

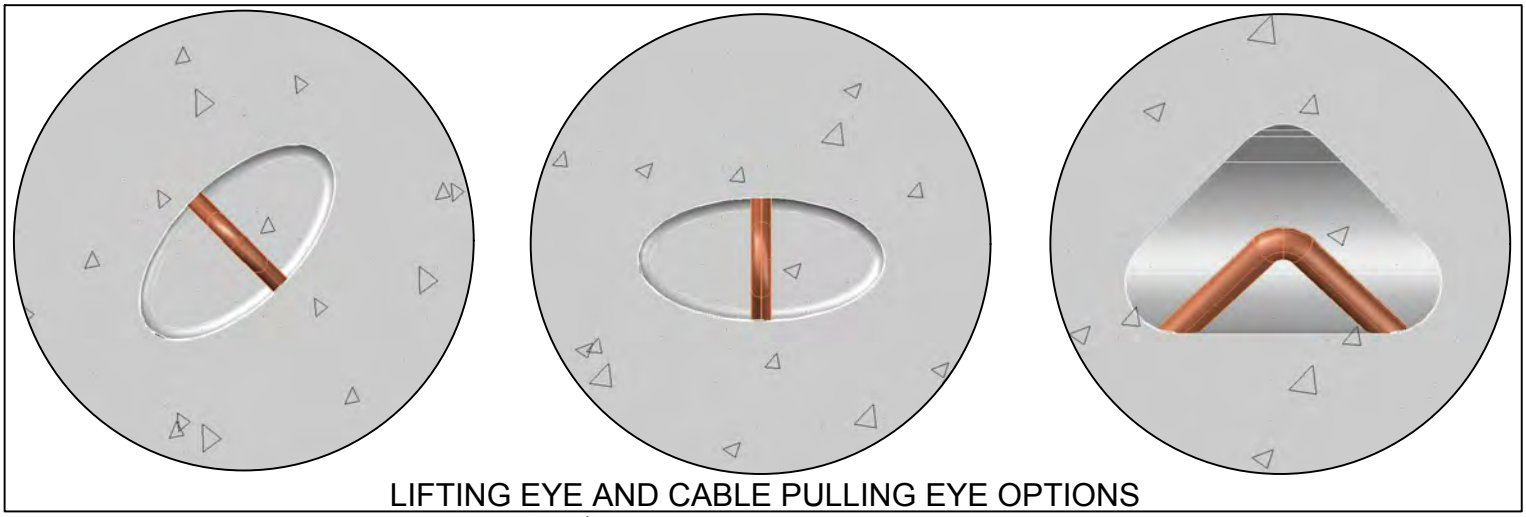
UNDERGROUND INSTALLATION SPECIFICATIONS

VAULT FOR SUBMERSIBLE SWITCHGEAR AND SPLICE BOX
PAGE 2 OF 2

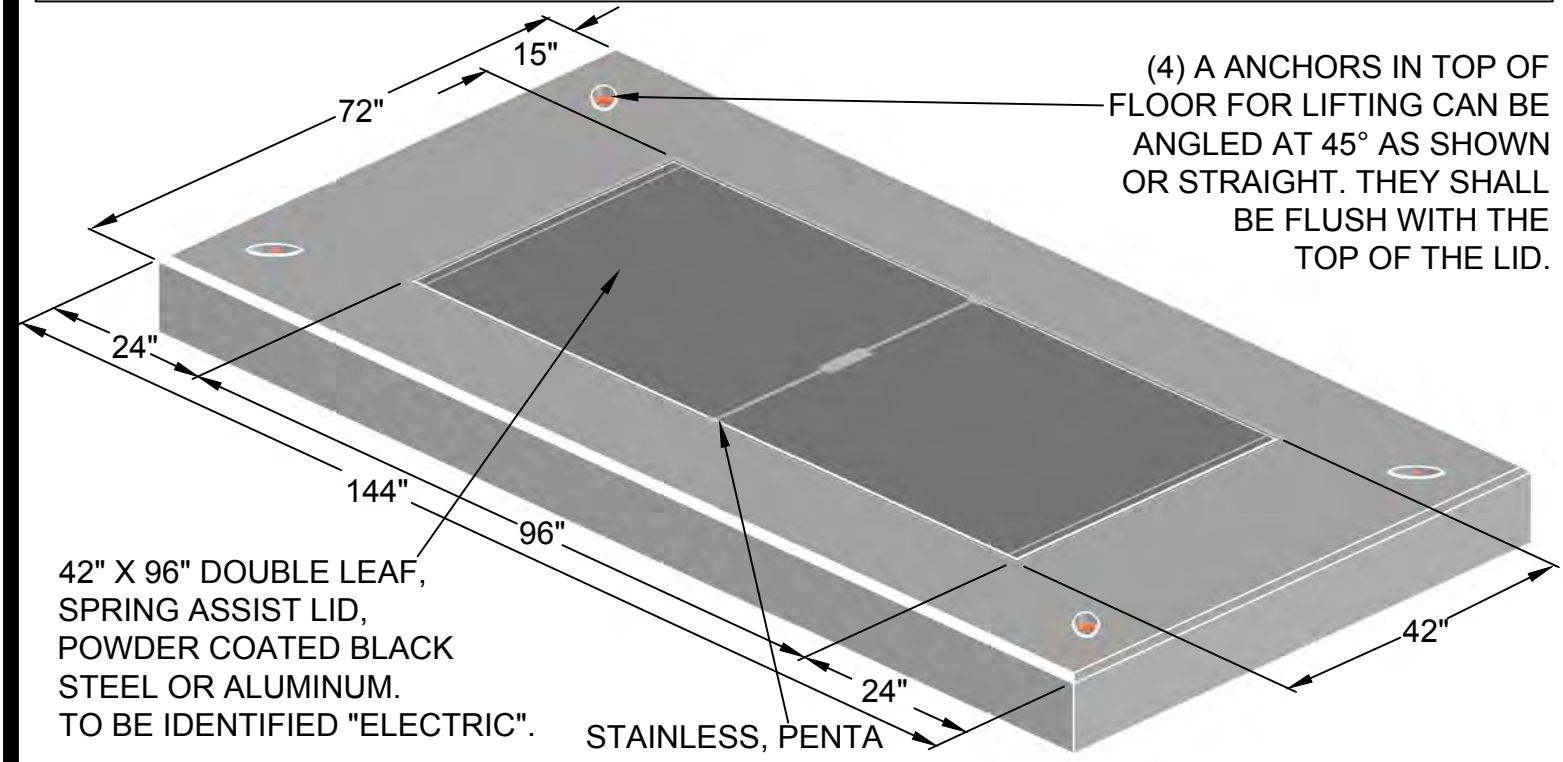
drawn:	approved:	date:	530-050
RWC	MMG	07/23/2020	

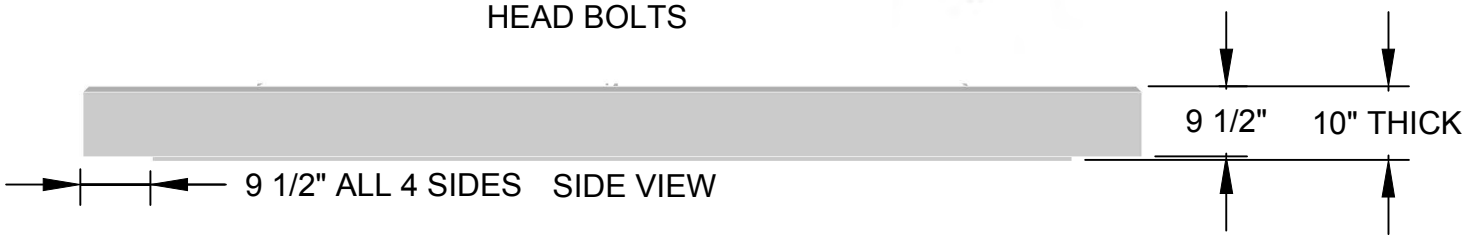
GENERAL NOTES:

- ALL CONCRETE TO HAVE 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60. BAR BENDING AND PLACEMENT SHALL COMPLY WITH LATEST ACI STANDARDS. DESIGN BASED ON AASHTO HS 20-44 LOADING.
- ALL LIFTING AND PULLING EYES SHALL BE RATED FOR A MINIMUM 5,000 POUNDS EACH.
- LIFTING AND PULLING EYE SHAPES AND DIMENSIONS CAN VARY, SO LONG AS FORM, FIT AND FUNCTION ARE SATISFIED.



LIFTING EYE AND CABLE PULLING EYE OPTIONS



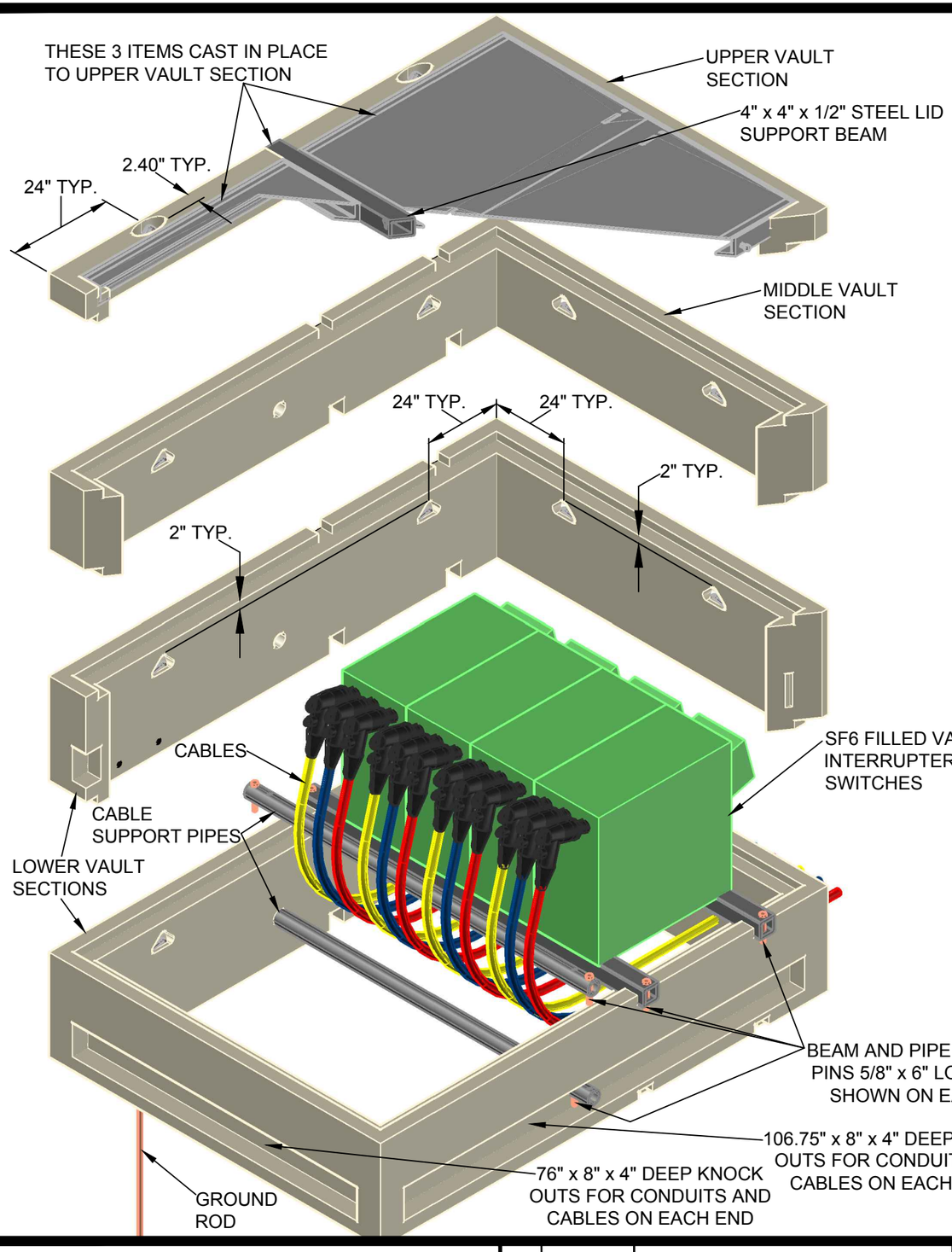


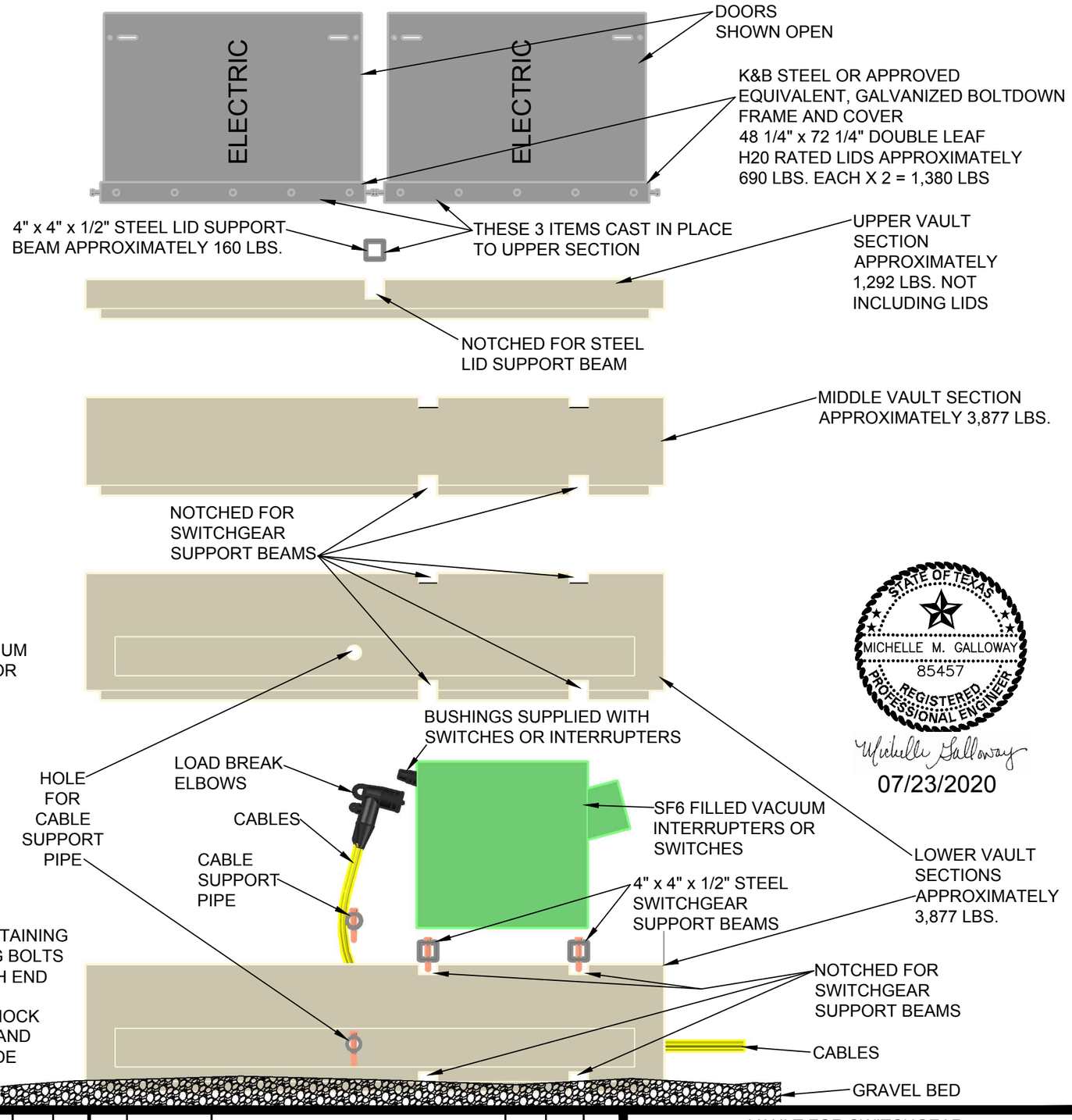
REV	A	DATE	02/15/2019	REVISION	ISSUE FOR CONSTRUCTION	BY	RWC	CHK	EJD	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

LID FOR SUBMERSIBLE SWITCHGEAR AND SPLICE BOX (FOR USE WITH VAULT 530-050)

drawn:	approved:	date:	530-051
RWC	MMG	02/15/2019	





STATE OF TEXAS
MICHELLE M. GALLOWAY
85457
REGISTERED PROFESSIONAL ENGINEER

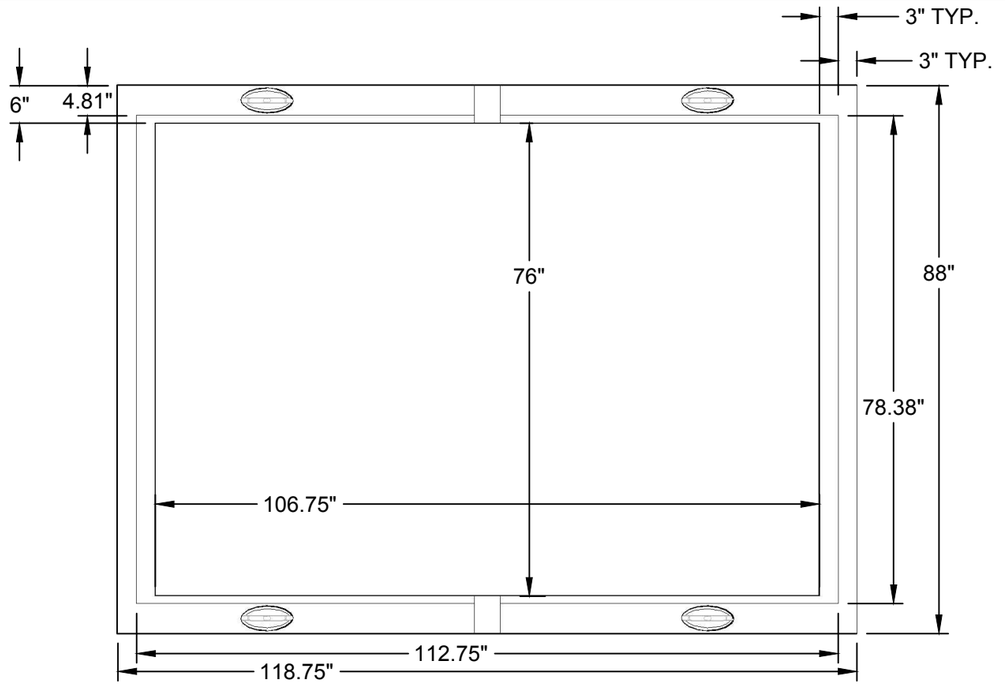
07/23/2020

UNDERGROUND INSTALLATION SPECIFICATIONS

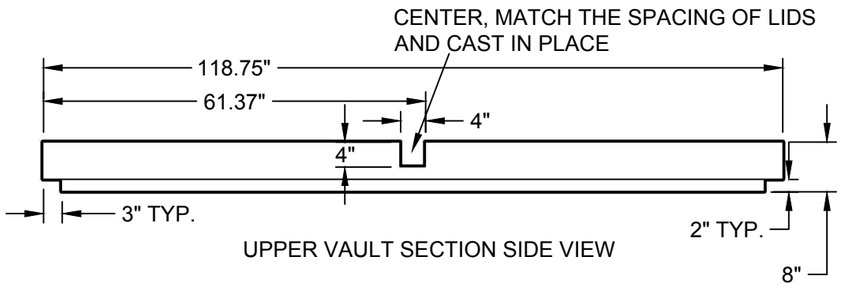
REV	DATE	REVISION	BY	CHK	APR
B	07/23/2020	GROUND ROD TO 3/4" X 10'	RWC	SSS	MMG

VAULT FOR SWITCHGEAR
STACKABLE SECTIONS WITH SQUARE STEEL TUBING FOR SWITCHGEAR SUPPORT AND TWO SETS DOUBLE DOOR CAST-IN-PLACE LIDS

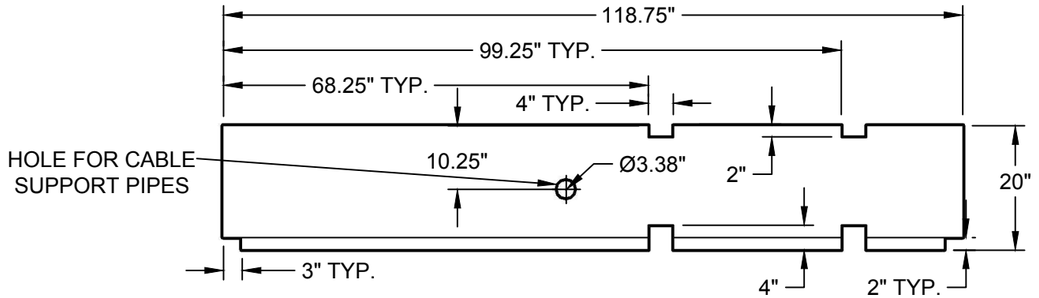
drawn:	approved:	date:	
RWC	MMG	07/23/2020	530-052 PAGE 1 OF 4



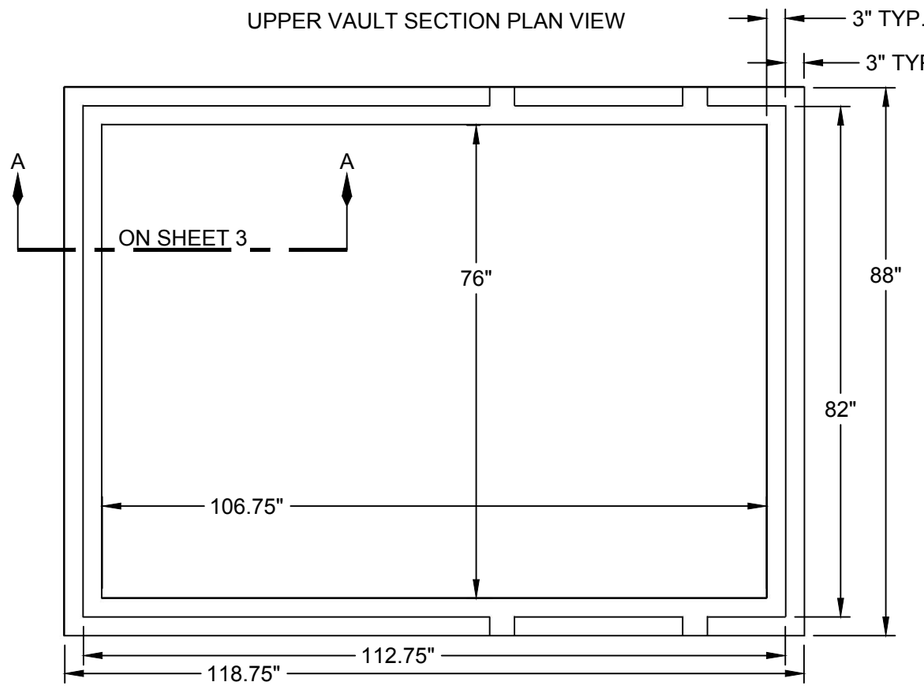
UPPER VAULT SECTION PLAN VIEW



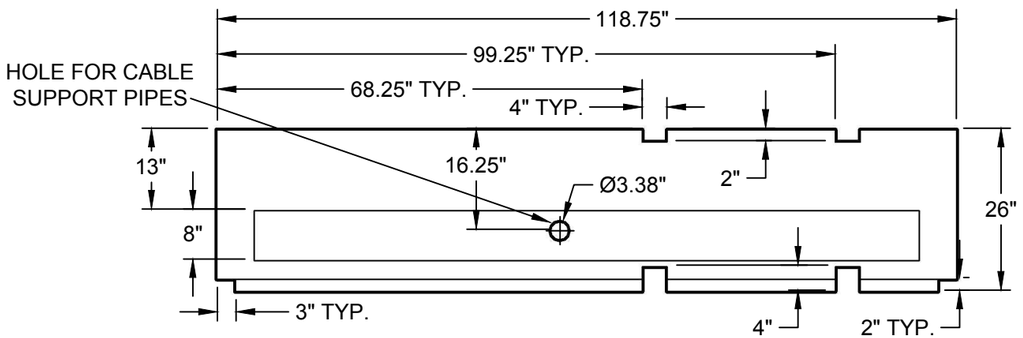
UPPER VAULT SECTION SIDE VIEW



MIDDLE VAULT SECTION SIDE VIEW



MIDDLE AND LOWER VAULT SECTION PLAN VIEW



LOWER VAULT SECTION SIDE VIEW

STATE OF TEXAS
MICHELLE M. GALLOWAY
85457
REGISTERED PROFESSIONAL ENGINEER

Michelle Galloway

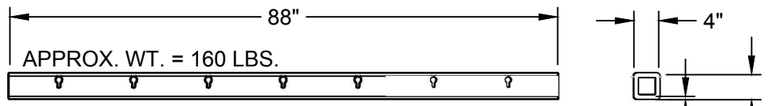
07/23/2020

UNDERGROUND INSTALLATION SPECIFICATIONS

REV	DATE	REVISION	BY	CHK	APR
B	07/23/2020	GROUND ROD TO 3/4" X 10'	RWC	SSS	MMG

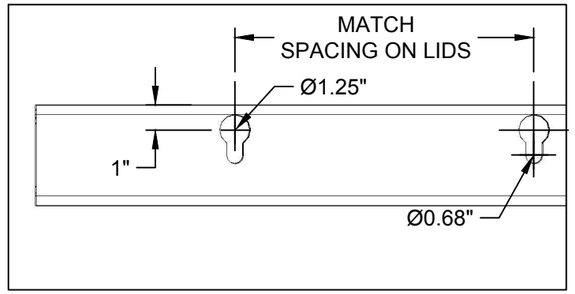
VAULT FOR SWITCHGEAR
STACKABLE SECTIONS WITH SQUARE STEEL TUBING FOR SWITCHGEAR SUPPORT AND TWO SETS DOUBLE DOOR CAST-IN-PLACE LIDS

drawn:	approved:	date:	
RWC	MMG	07/23/2020	530-052 PAGE 2 OF 4

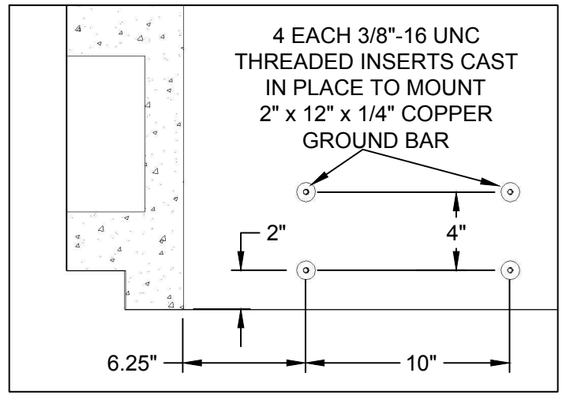


4" x 4" x 1/2" SQUARE STEEL TUBING. CUT KEYHOLES MATCHING THE SPACING OF NELSON STUDS ON LIDS, ASSEMBLE TO LIDS AND CAST IN PLACE.

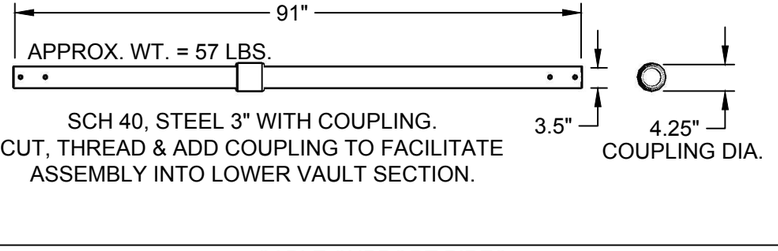
LID SPACING BEAM



LID SPACING BEAM DRILLING DETAIL
(BOTH SIDES)

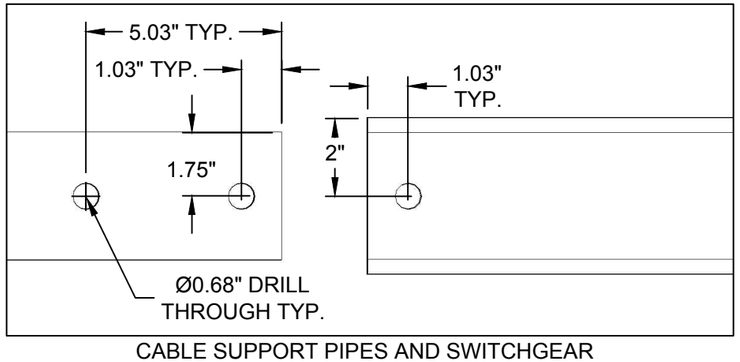


LOWER VAULT SECTION A-A

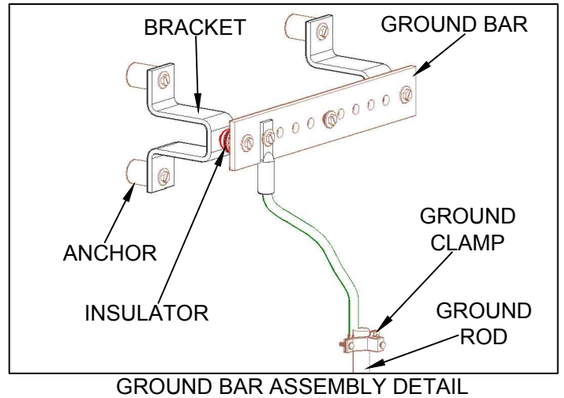


SCH 40, STEEL 3" WITH COUPLING.
CUT, THREAD & ADD COUPLING TO FACILITATE ASSEMBLY INTO LOWER VAULT SECTION.

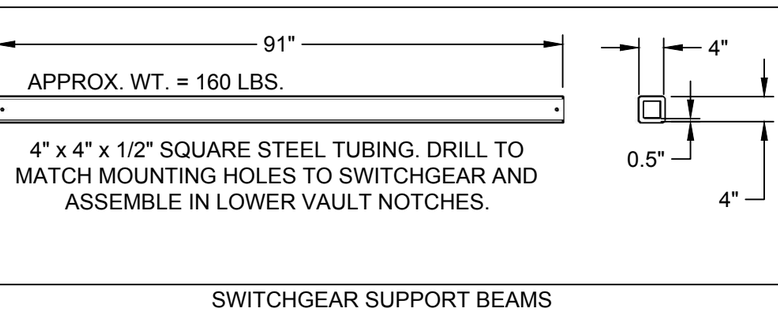
CABLE SUPPORT PIPES



CABLE SUPPORT PIPES AND SWITCHGEAR
SUPPORT BEAMS DRILLING DETAIL
(BOTH ENDS)



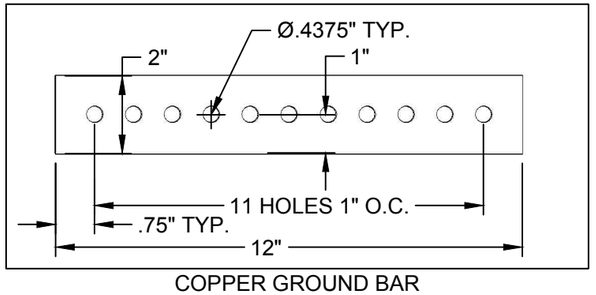
GROUND BAR ASSEMBLY DETAIL



4" x 4" x 1/2" SQUARE STEEL TUBING. DRILL TO MATCH MOUNTING HOLES TO SWITCHGEAR AND ASSEMBLE IN LOWER VAULT NOTCHES.

SWITCHGEAR SUPPORT BEAMS

07/23/2020



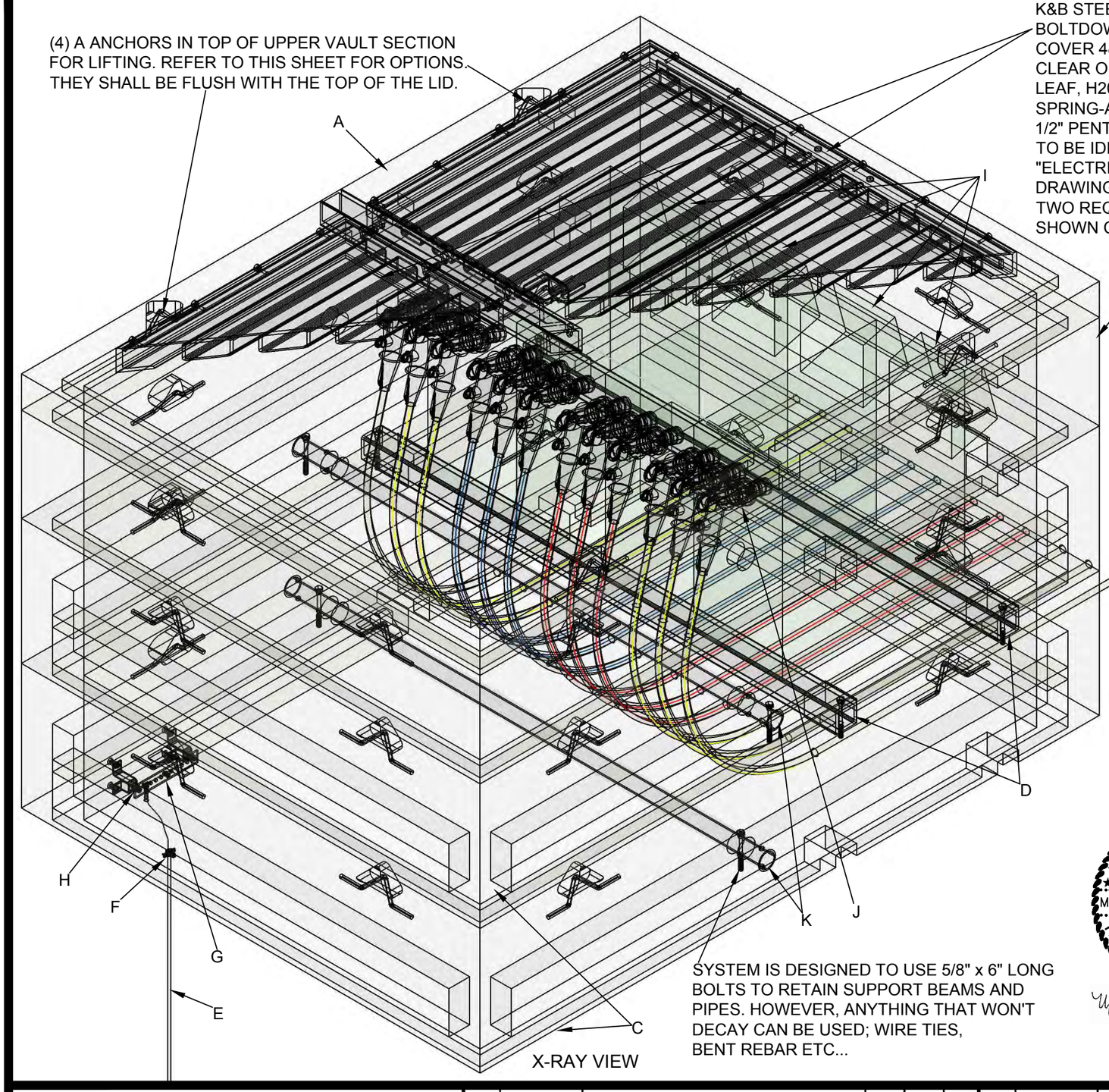
COPPER GROUND BAR

UNDERGROUND
INSTALLATION
SPECIFICATIONS

REV	DATE	REVISION	BY	CHK	APR
B	07/23/2020	GROUND ROD TO 3/4" X 10'	RWC	SSS	MMG

VAULT FOR SWITCHGEAR
STACKABLE SECTIONS WITH SQUARE STEEL TUBING FOR SWITCHGEAR SUPPORT AND TWO SETS DOUBLE DOOR CAST IN PLACE LIDS

drawn:	approved:	date:	
RWC	MMG	07/23/2020	530-052 PAGE 3 OF 4



X-RAY VIEW

SYSTEM IS DESIGNED TO USE 5/8" x 6" LONG BOLTS TO RETAIN SUPPORT BEAMS AND PIPES. HOWEVER, ANYTHING THAT WON'T DECAY CAN BE USED; WIRE TIES, BENT REBAR ETC...

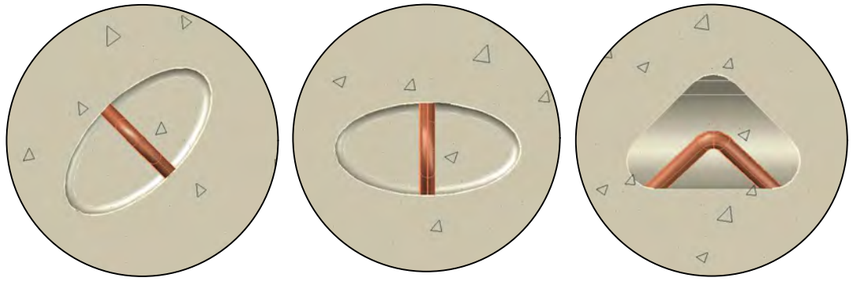
GENERAL NOTES:

- ALL CONCRETE TO HAVE 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60. BAR BENDING AND PLACEMENT SHALL COMPLY WITH LATEST ACI STANDARDS. DESIGN BASED ON AASHTO HS 20-44 LOADING.
- ALL LIFTING AND PULLING EYES SHALL BE RATED FOR A MINIMUM 5,000 POUNDS EACH.
- LIFTING AND PULLING EYE SHAPES AND DIMENSIONS CAN VARY, SO LONG AS FORM, FIT AND FUNCTION ARE SATISFIED.
- ANCHORS IN SIDE WALLS OF VAULT SECTIONS FOR LIFTING CAN BE ANGLED AT 45° AS SHOWN OR STRAIGHT. THEY SHALL BE FLUSH WITH THE SIDE WALLS.

ITEM	DESCRIPTION	QTY
A	UPPER VAULT SECTION WITH CAST-IN-PLACE LIDS AND 4" x 4" x 1/2" SQUARE TUBE CENTER SUPPORT BEAM	1
B	MIDDLE VAULT SECTION WITH (INSTALL IF REQUIRED) CABLE SUPPORT PIPE AND GROUND BAR MOUNTING INSERTS	1
C	LOWER VAULT SECTION WITH (INSTALL IF REQUIRED) CABLE SUPPORT PIPE AND GROUND BAR MOUNTING INSERTS	2
D	4" x 4" x 1/2" STEEL SQUARE TUBE SWITCHGEAR SUPPORT BEAMS DRILLED TO MATCH SWITCHGEAR MOUNTING HOLES AS SHOWN ON PAGE 3	2
E	GROUND ROD 3/4" x 10' COPPER	1
F	GROUND ROD CLAMPING NUT 7/8" & GROUND WIRE	1
G	2" x 12" x 1/4" COPPER GROUND BAR DRILLED AS SHOWN ON PAGE 3	1
H	GROUND BAR MOUNTING INSULATORS	2
I	SWITCHGEAR UNDERGROUND SF6 GAS FILLED	1
J	CONNECTOR URD LOAD BREAK ELBOW 25kV	12
K	3" SCH 40 STEEL PIPE WITH COUPLING CUT AND DRILLED FOR RETAINING BOLTS AS SHOWN ON PAGE 3	AS REQ'D
* DENOTES "GRAB BAG" ITEM		

STATE OF TEXAS
MICHELLE M. GALLOWAY
85457
REGISTERED PROFESSIONAL ENGINEER

07/23/2020



LIFTING EYE AND CABLE PULLING EYE OPTIONS

UNDERGROUND INSTALLATION SPECIFICATIONS

REV	DATE	REVISION	BY	CHK	APR
B	07/23/2020	GROUND ROD TO 3/4" X 10'	RWC	SSS	MMG

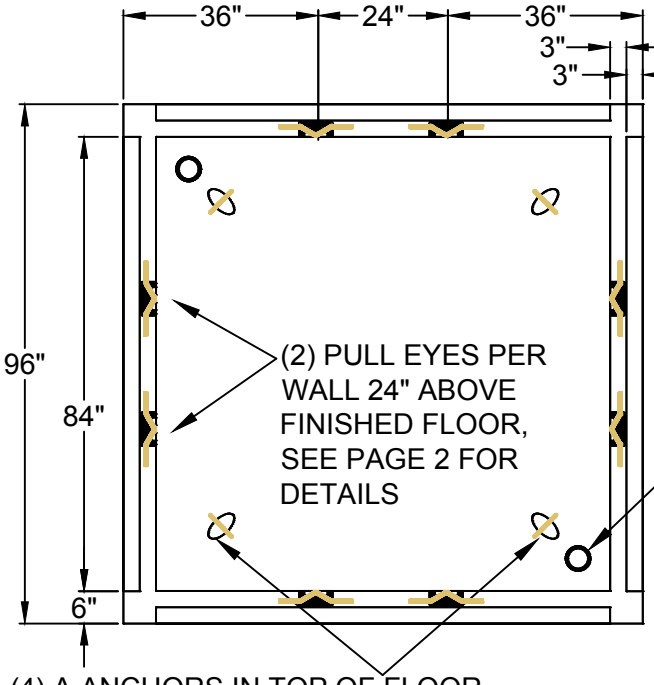
VAULT FOR SWITCHGEAR
STACKABLE SECTIONS WITH SQUARE STEEL TUBING FOR SWITCHGEAR SUPPORT AND TWO SETS DOUBLE DOOR CAST-IN-PLACE LIDS

drawn:	approved:	date:
RWC	MMG	07/23/2020

530-052

NOTES:

1) EACH SIDE WALL SHALL HAVE TWO PULLING EYES LOCATED 24" APART, EVENLY SPACED BETWEEN INSIDE WALLS, AND 24" FROM THE BOTTOM OF THE VAULT.
2) ALL PULLING IRONS SHALL BE RATED FOR A MINIMUM OF 5,000 POUNDS EACH.
3) 6" ABOVE THE BOTTOM OF THE VAULT, AN 8" KNOCKOUT SHALL EXTEND AROUND THE ENTIRE PERIMETER OF THE VAULT (EXCEPT FOR 6" FROM EACH CORNER) FOR CONDUIT TO BE BROUGHT IN. KNOCKOUTS SHOULD BE 3" THICK AND FLUSH WITH THE INSIDE OF THE VAULT. THE VAULT SHALL BE 48" DEEP.
4) THE VAULT SHALL BE INSTALLED ON A MINIMUM 6" DEEP BED OF 1/2" TO 3/4" DIAMETER GRAVEL.



5) EACH VAULT SHALL BE SUPPLIED WITH EITHER A 3/4" X 10' GROUND ROD DRIVEN IN THE VAULT FLOOR OR A MINIMUM 100 FEET OF #6 BARE COPPER WIRE BURIED NO LESS THAN 18" DEEP IN THE EARTH AND MEETING THE NATIONAL ELECTRICAL SAFETY CODE RULE #094B3.
6) ALL CONCRETE TO HAVE 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60. BAR BENDING AND PLACEMENT SHALL COMPLY WITH LATEST ACI STANDARDS. DESIGN BASED ON AASHTO HS 20-44 LOADING.
7) LIFTING AND PULLING EYE SHAPES AND DIMENSIONS CAN VARY, SO LONG AS FORM, FIT AND FUNCTION ARE SATISFIED.
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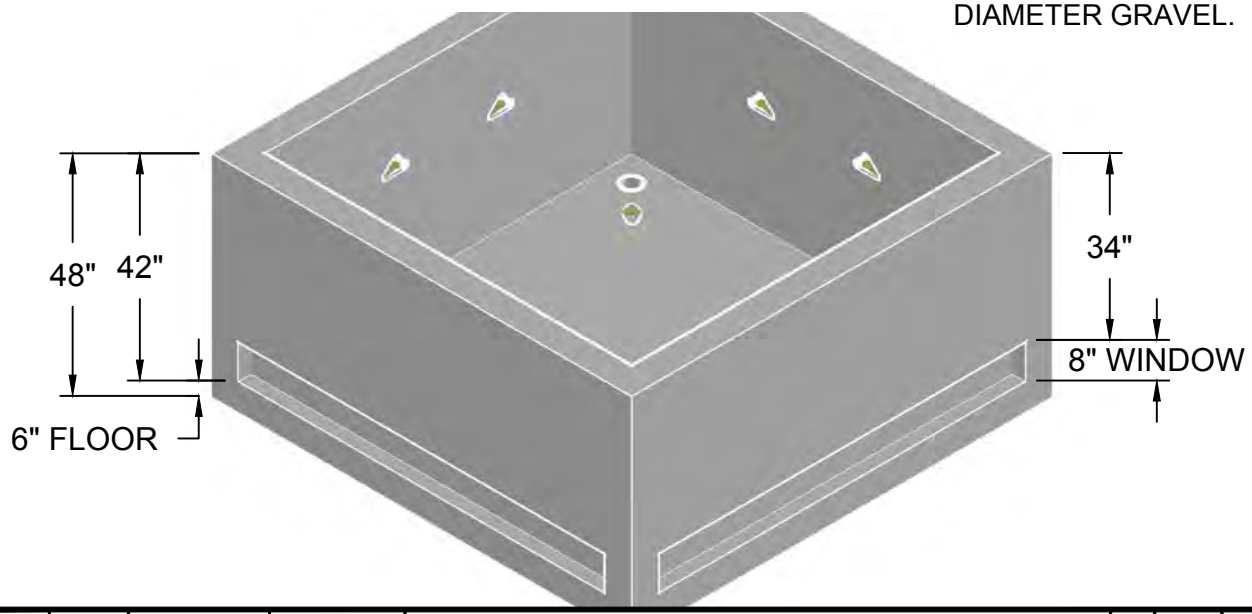
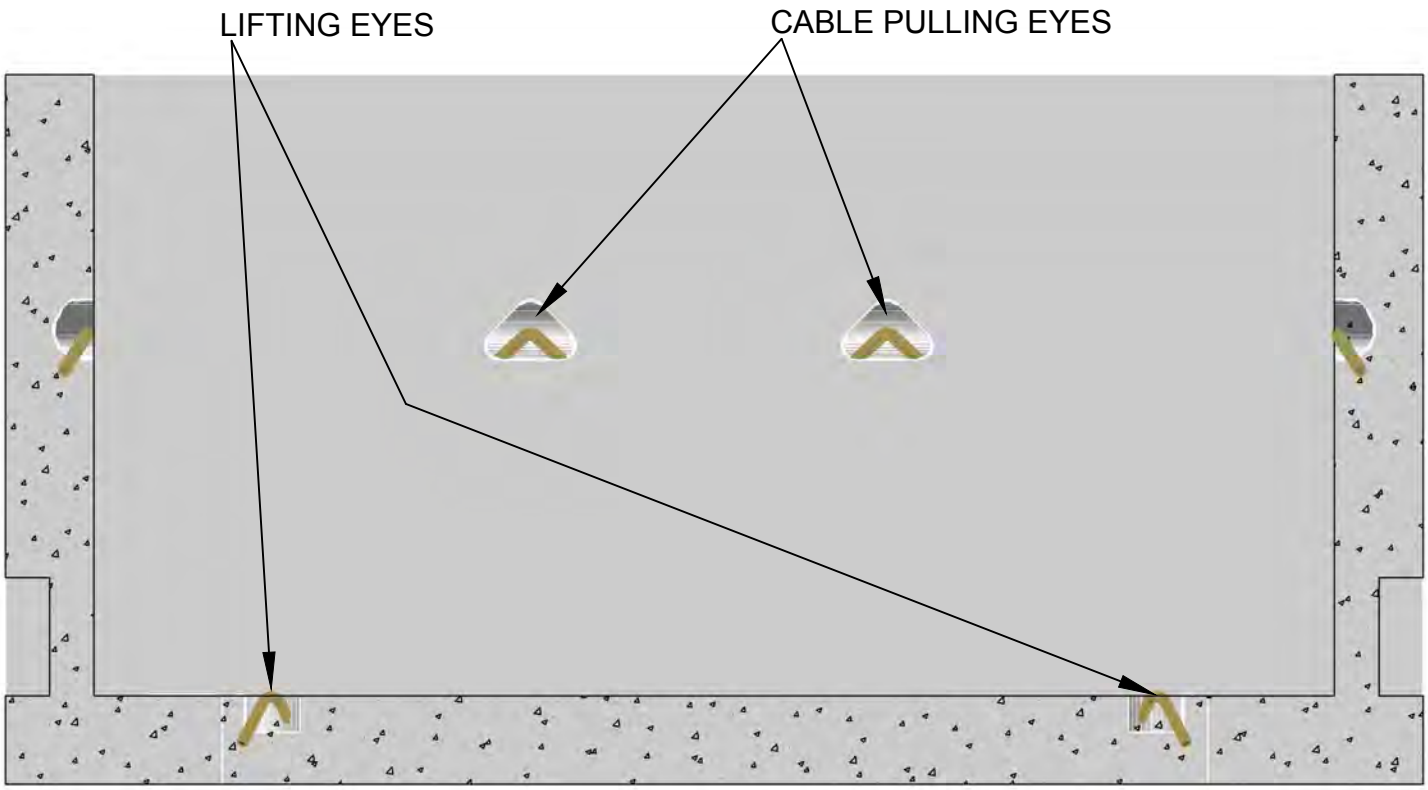


REV	C	DATE	07/23/2020	REVISION	NOTE 5: 3/4" X 10' GROUND ROD WAS 8' GROUND ROD	BY	RWC	CHK	SSS	APR	MMG

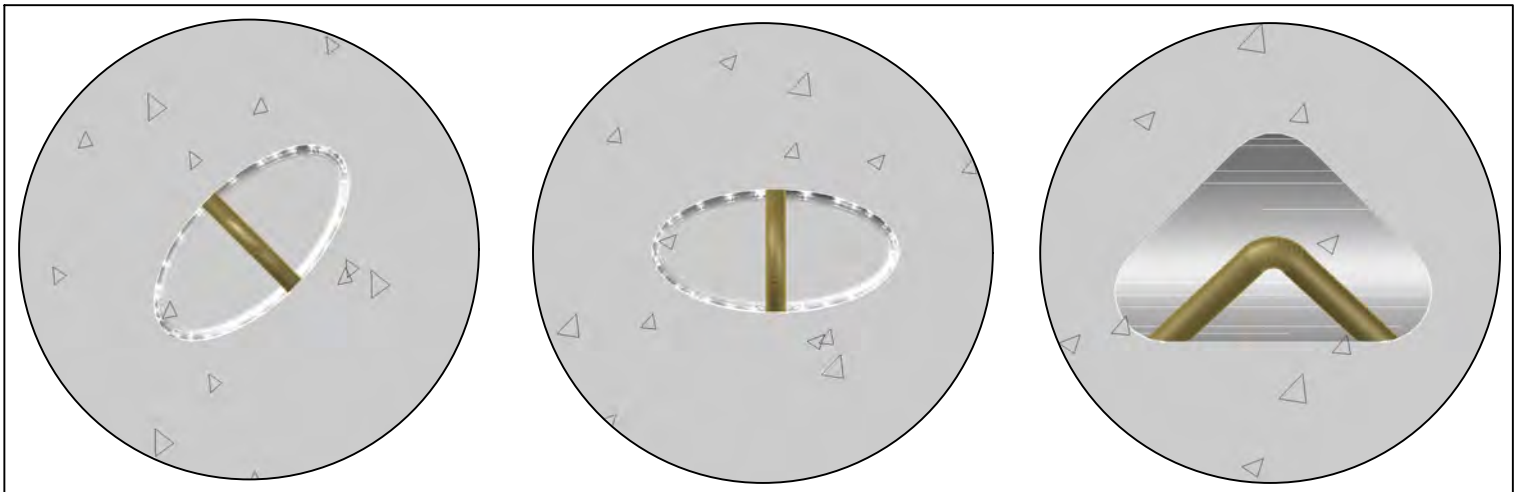
UNDERGROUND INSTALLATION SPECIFICATIONS

VAULT FOR DEAD FRONT, ABOVE-GROUND SWITCHGEAR
PAGE 1 OF 2

drawn:	approved:	date:	530-090
RWC	MMG	07/23/2020	



SECTION THROUGH LIFTING EYES AND CABLE PULLING EYES



LIFTING EYE AND CABLE PULLING EYE OPTIONS

REV	C	DATE	07/23/2020	REVISION	NOTE 5: 3/4" X 10' GROUND ROD WAS 8' GROUND ROD	BY	RWC	CHK	SSS	APR	MMG

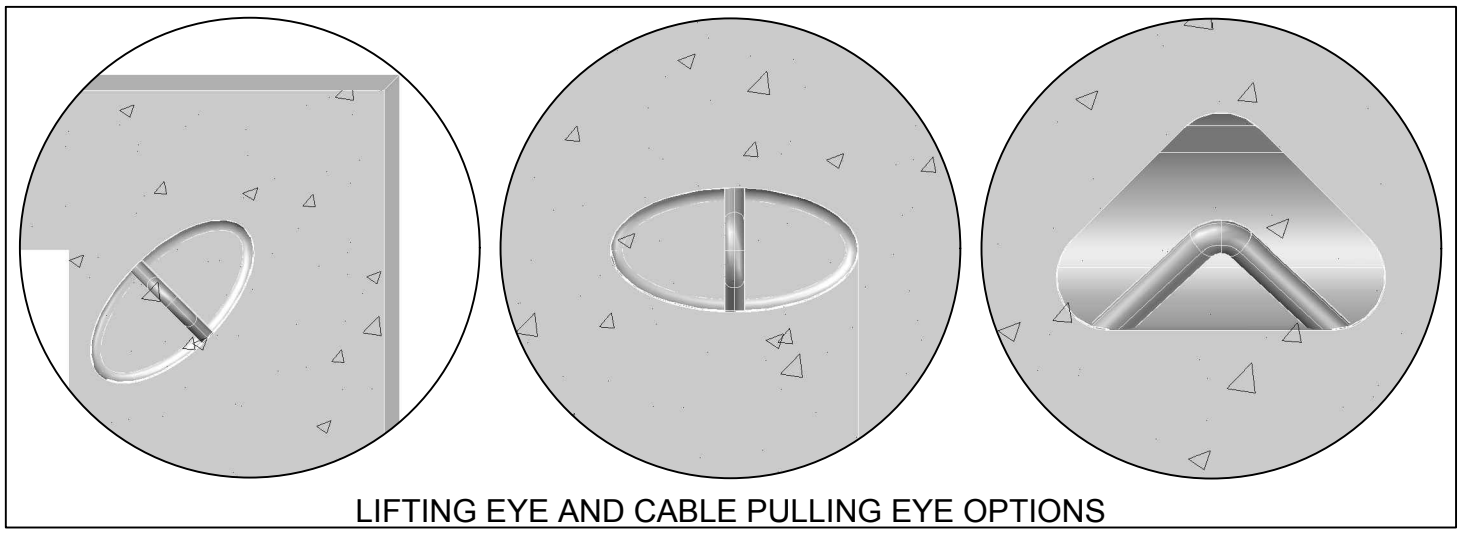
UNDERGROUND INSTALLATION SPECIFICATIONS

VAULT FOR DEAD FRONT, ABOVE-GROUND SWITCHGEAR
PAGE 2 OF 2

drawn:	approved:	date:	530-090
RWC	MMG	07/23/2020	

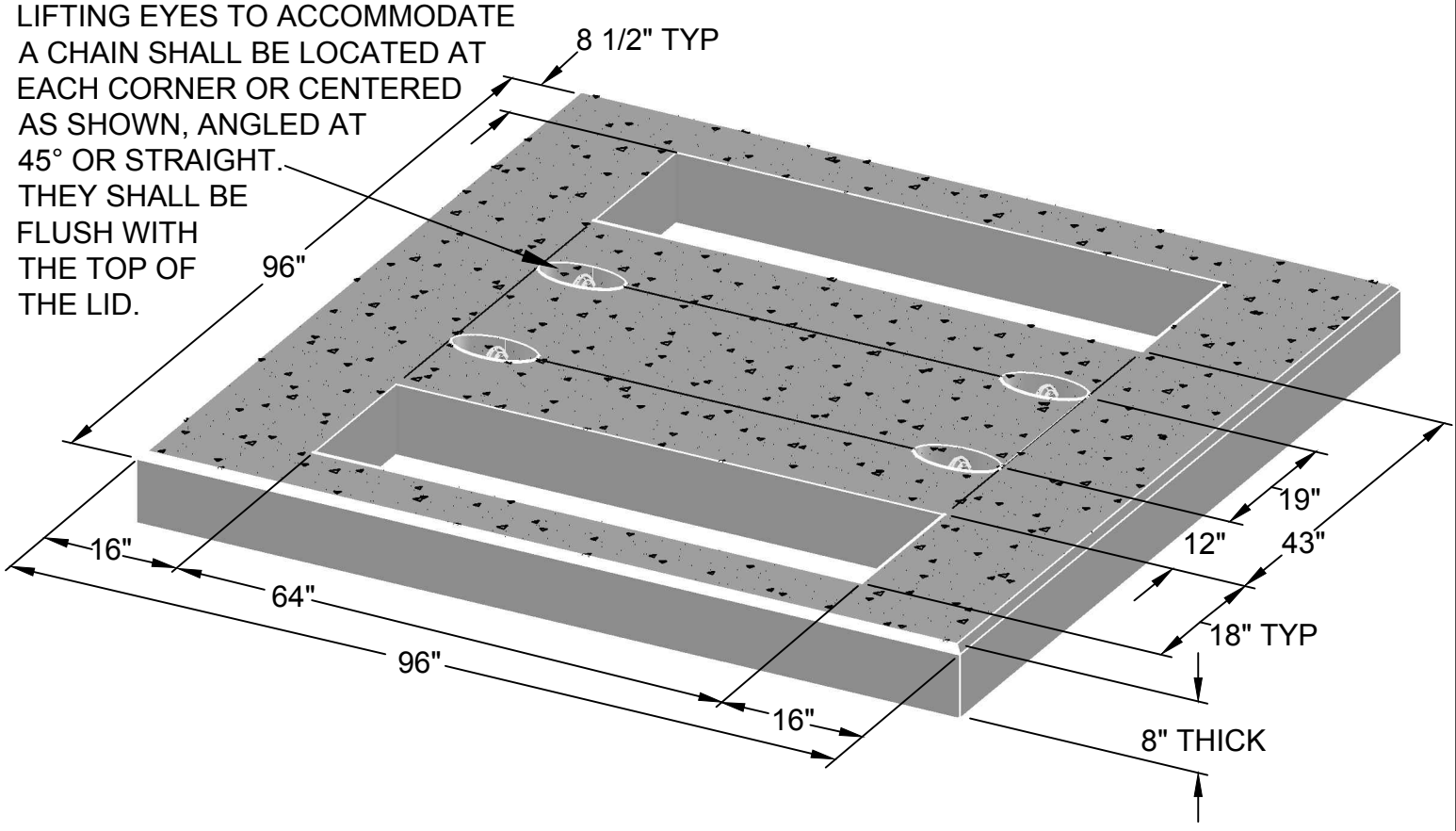
GENERAL NOTES:

- ALL CONCRETE TO HAVE 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60. BAR BENDING AND PLACEMENT SHALL COMPLY WITH LATEST ACI STANDARDS. DESIGN BASED ON AASHTO HS 20-44 LOADING.
- ALL LIFTING AND PULLING EYES SHALL BE RATED FOR A MINIMUM 5,000 POUNDS EACH.
- LIFTING AND PULLING EYE SHAPES AND DIMENSIONS CAN VARY, SO LONG AS FORM, FIT AND FUNCTION ARE SATISFIED.



LIFTING EYE AND CABLE PULLING EYE OPTIONS

LIFTING EYES TO ACCOMMODATE A CHAIN SHALL BE LOCATED AT EACH CORNER OR CENTERED AS SHOWN, ANGLED AT 45° OR STRAIGHT. THEY SHALL BE FLUSH WITH THE TOP OF THE LID.



REV	B	DATE	02/05/2019	REVISION	CHANGED POSITION OF ANCHORS	BY	RWC	CHK	EJD	APR	MMG

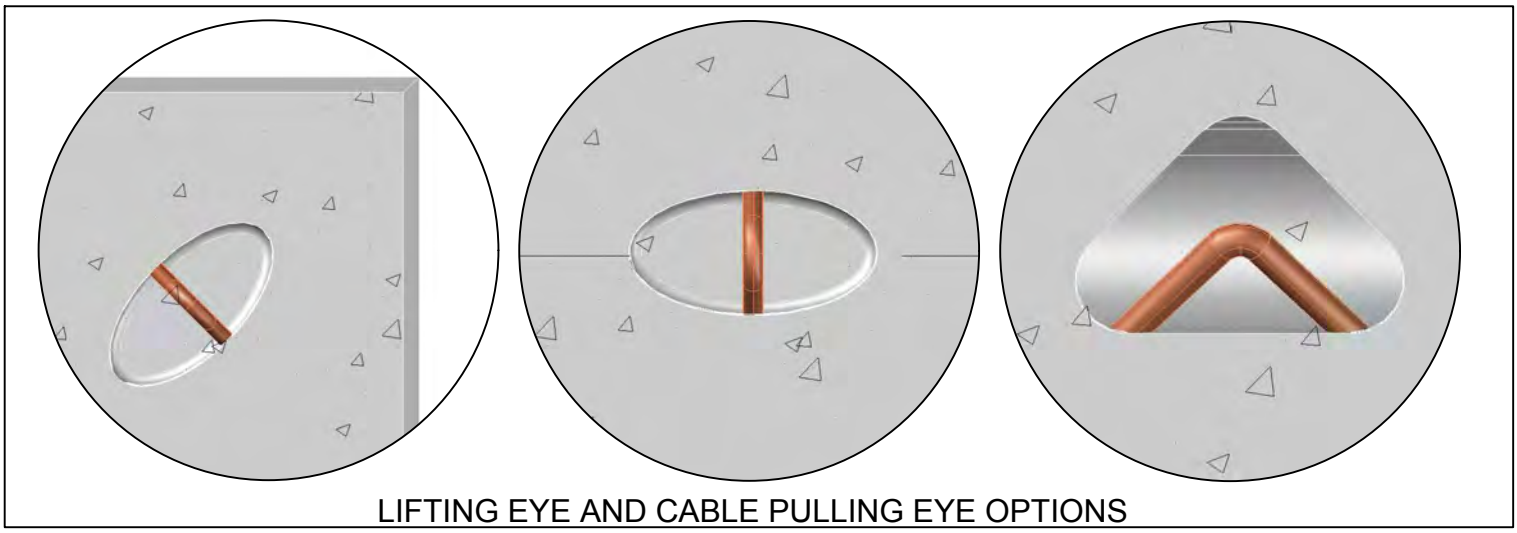
UNDERGROUND INSTALLATION SPECIFICATIONS

LID FOR DEAD FRONT AND ABOVE GROUND SWITCHGEAR (FOR USE ON VAULT 530-090)

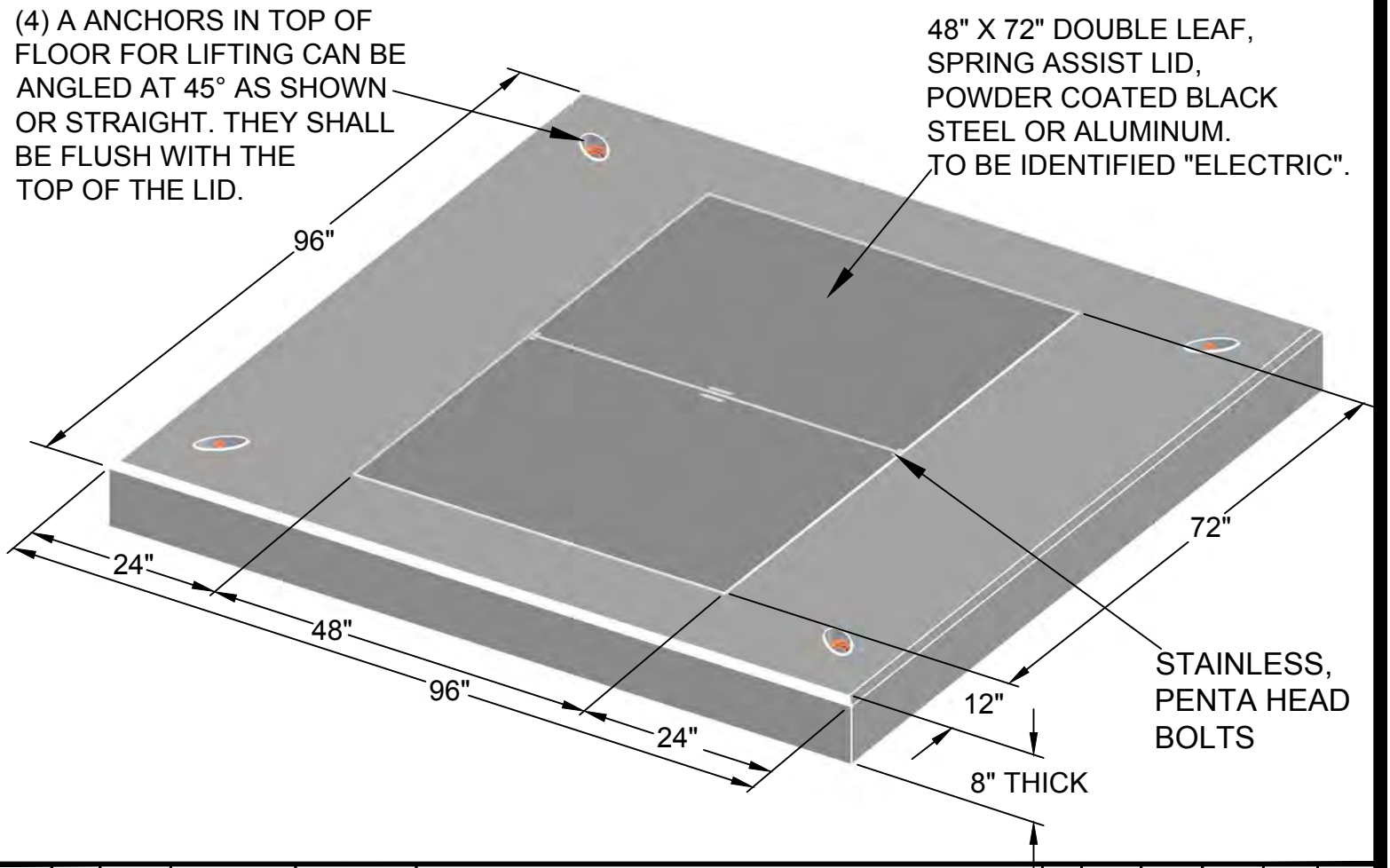
drawn:	approved:	date:	530-091
RWC	MMG	02/05/2019	

GENERAL NOTES:

- ALL CONCRETE TO HAVE 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60. BAR BENDING AND PLACEMENT SHALL COMPLY WITH LATEST ACI STANDARDS. DESIGN BASED ON AASHTO HS 20-44 LOADING.
- ALL LIFTING AND PULLING EYES SHALL BE RATED FOR A MINIMUM 5,000 POUNDS EACH.
- LIFTING AND PULLING EYE SHAPES AND DIMENSIONS CAN VARY, SO LONG AS FORM, FIT AND FUNCTION ARE SATISFIED.



LIFTING EYE AND CABLE PULLING EYE OPTIONS



REV	B	DATE	02/12/2019	REVISION	ISSUE FOR CONSTRUCTION	BY	RWC	CHK	EJD	APR	MMG

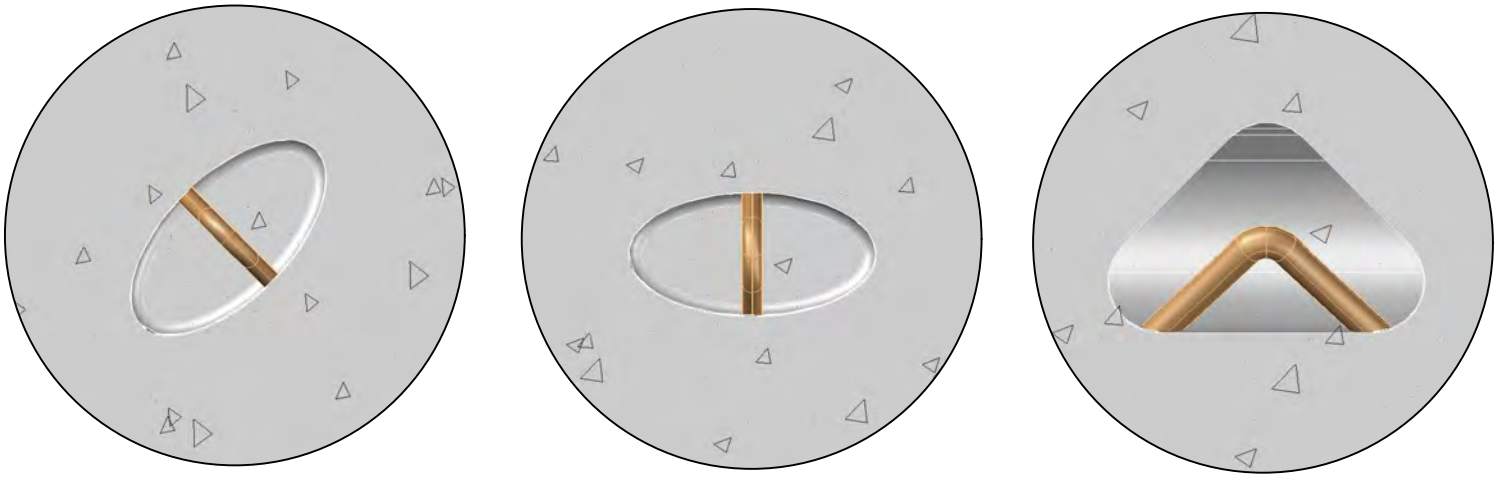
UNDERGROUND INSTALLATION SPECIFICATIONS

LID FOR SUBMERSIBLE SWITCHGEAR AND SPLICE BOX (FOR USE WITH VAULT 530-090)

drawn:	approved:	date:	530-092
RWC	MMG	02/12/2019	

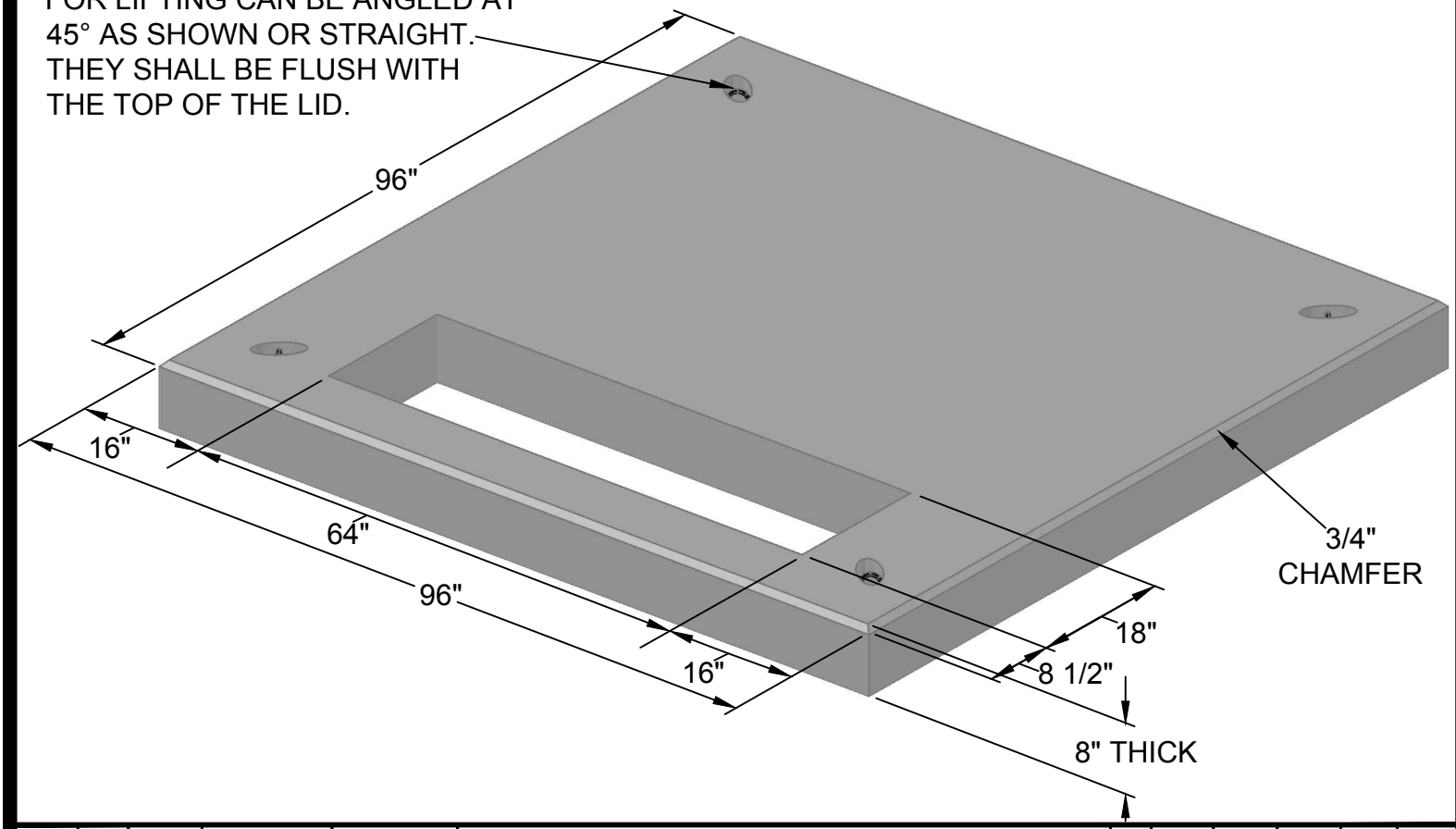
GENERAL NOTES:

- ALL CONCRETE TO HAVE 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60. BAR BENDING AND PLACEMENT SHALL COMPLY WITH LATEST ACI STANDARDS. DESIGN BASED ON AASHTO HS 20-44 LOADING.
- ALL LIFTING AND PULLING EYES SHALL BE RATED FOR A MINIMUM 5,000 POUNDS EACH.
- LIFTING AND PULLING EYE SHAPES AND DIMENSIONS CAN VARY, SO LONG AS FORM, FIT AND FUNCTION ARE SATISFIED.



LIFTING EYE AND CABLE PULLING EYE OPTIONS

(4) A ANCHORS IN TOP OF FLOOR FOR LIFTING CAN BE ANGLED AT 45° AS SHOWN OR STRAIGHT. THEY SHALL BE FLUSH WITH THE TOP OF THE LID.



REV	A	DATE	02/15/2019	REVISION	ISSUE FOR CONSTRUCTION	BY	RWC	CHK	EJD	APR	MMG

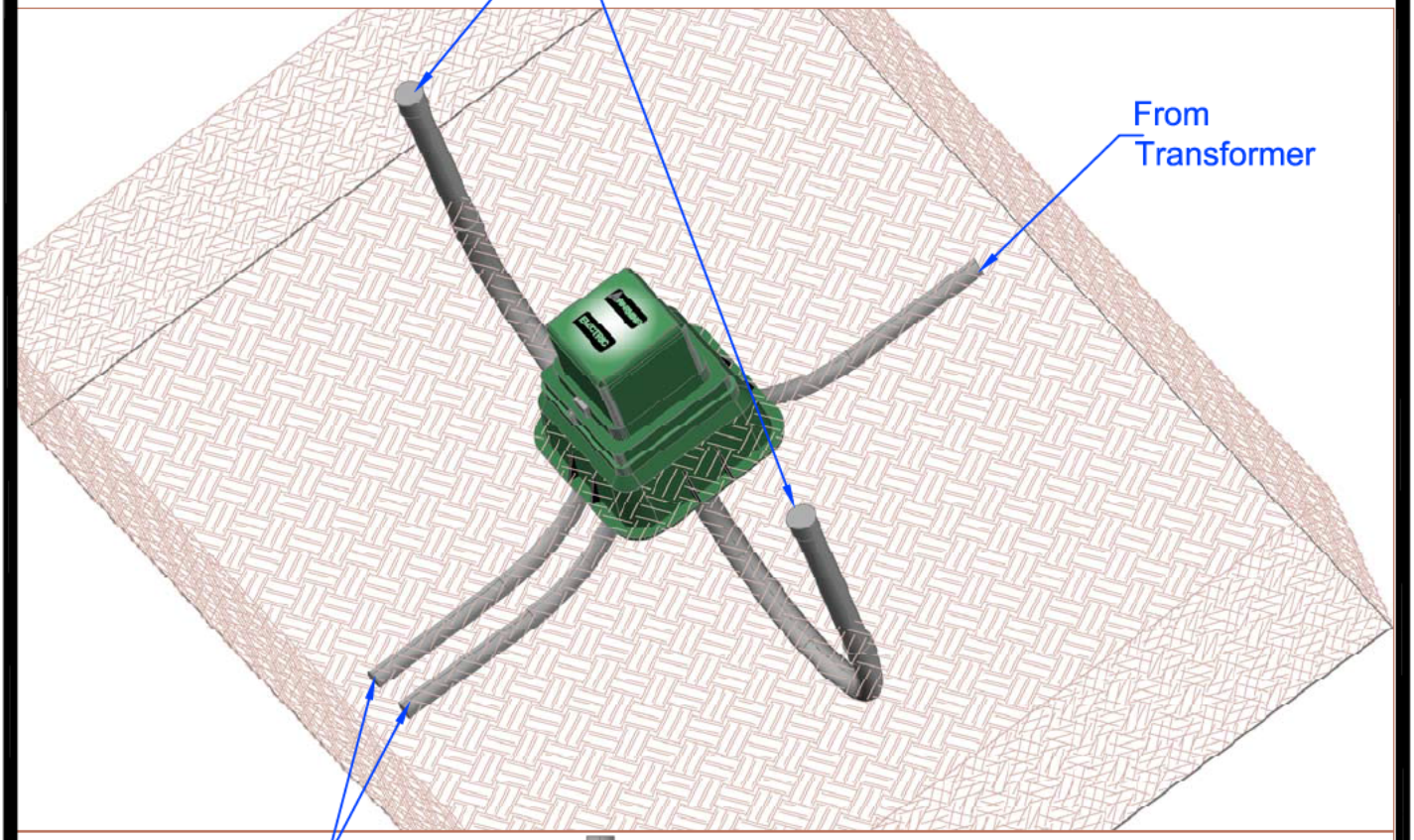
UNDERGROUND INSTALLATION SPECIFICATIONS

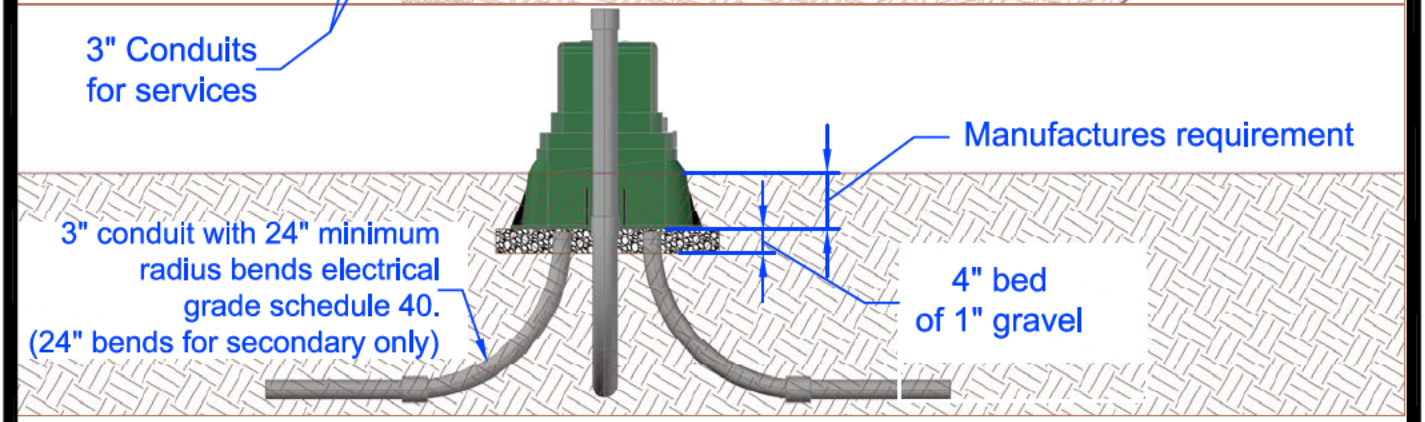
LID FOR DEAD-FRONT AND ABOVE-GROUND SWITCHGEAR SINGLE WINDOW (FOR USE ON VAULT 530-090)

drawn:	approved:	date:	530-093
RWC	MMG	02/15/2019	

Approved Enclosures:
Nordic PSP-151530-MG
Pencell AG18HDX-PECEWB

2-2" x 24" Radius Bends with Cap end. For each temporary hookup (two places). As required by Member. All conduits to enter vertically thru gravel bed in bottom of enclosure.





Secondary Enclosure Installation Instructions

1) Excavate the hole approximately four inches deeper than the suggested pedestal Burial Depth.
2) Compact the soil.
3) Add approximately four inches of 1" gravel to the bottom of the hole.
4) Compact and level the ground.
5) Place the pedestal into the hole.
6) Level the pedestal.
7) Back-fill with loose earth material.
8) Do not back-fill with chunks of frozen material or large rocks next to the pedestal.
9) Pack the back-fill material by foot tamping.

PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

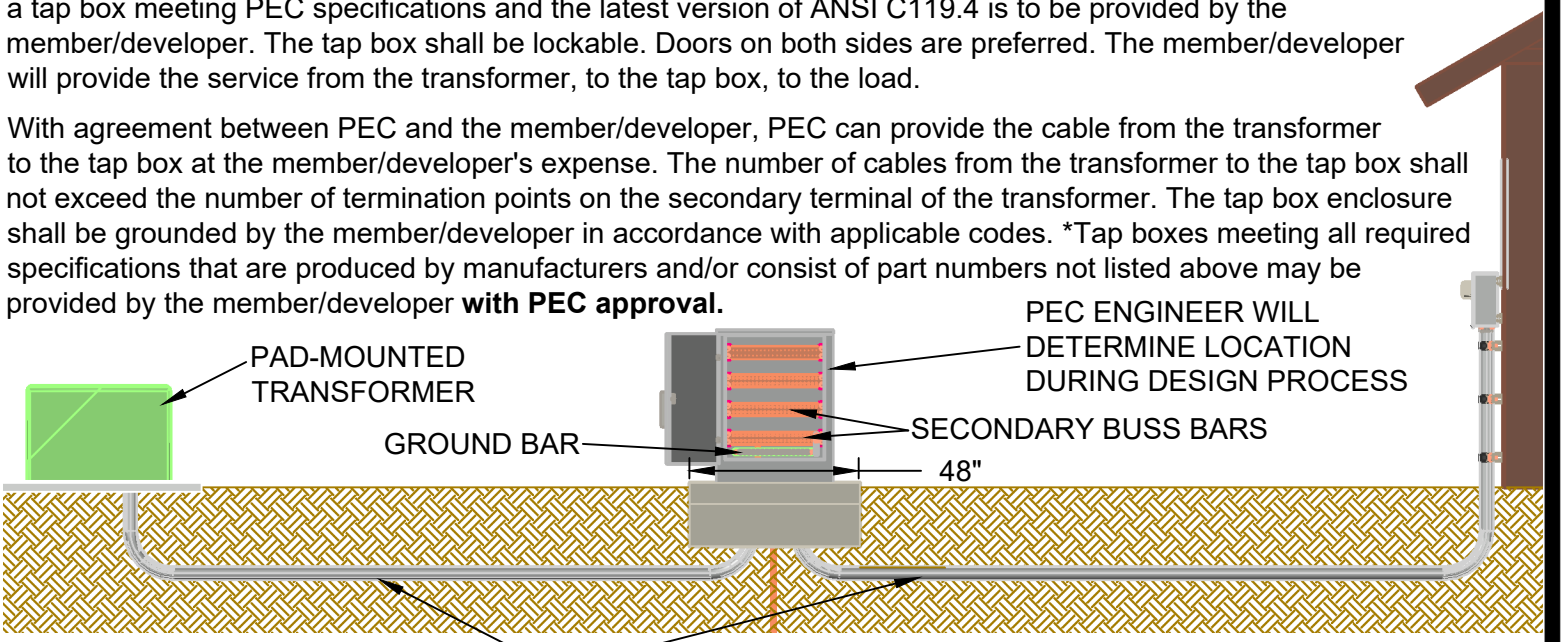
Secondary Enclosure

drawn:	approved	date:	drawing number:
JBS	MJB	March 8, 2013	550-020-0911

APPROVED TAP BOXES*	PART NUMBER
MILBANK 500 kcmil 22-POSITION	UAP6095-O-NES
HUBBELL/CMC UP TO 500 kcmil 21-POSITION	LWTE21-500S
HUBBELL/CMC UP TO 750 kcmil 22-POSITION	LWTE22-750LI
GIVCO	364816ctb

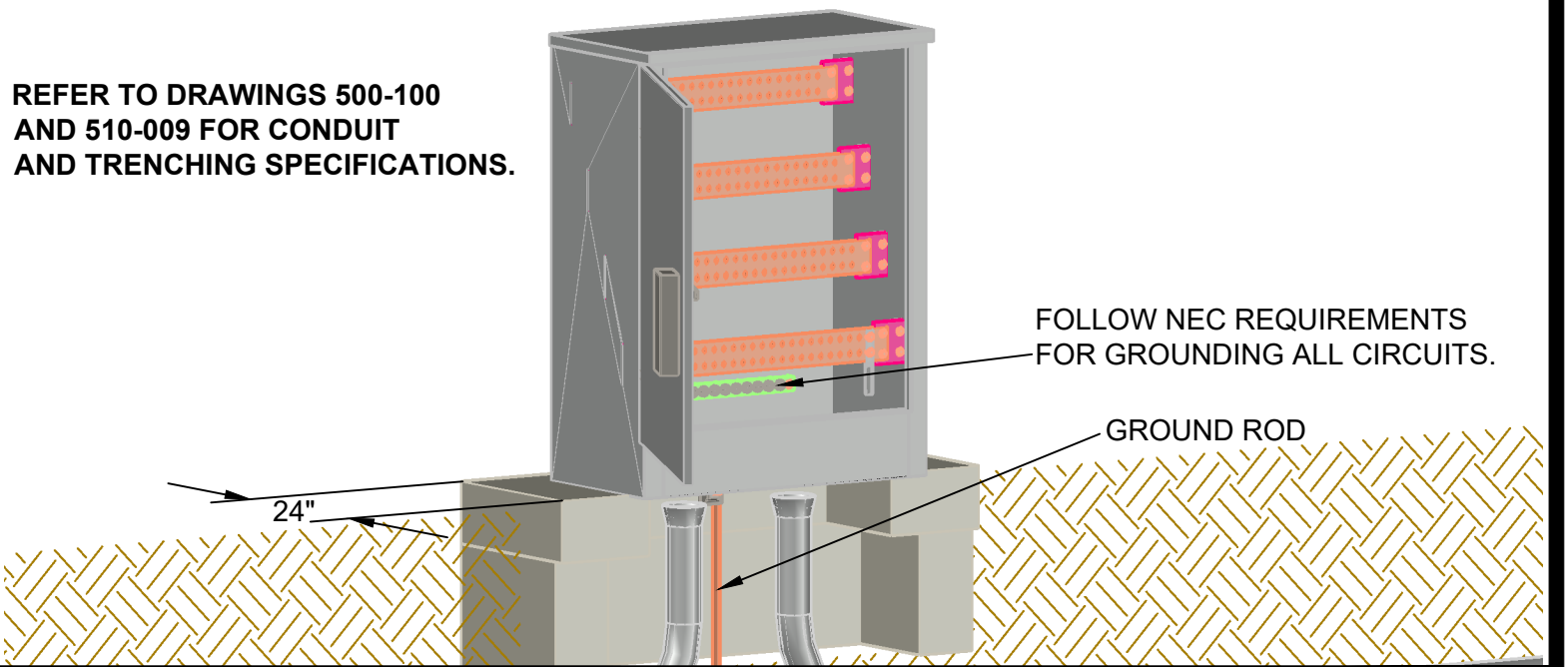
For commercial/industrial/multi-family residential underground services where the meter or a bank of meters is to be located on the building or adjacent to the load, the service (cable, conduit, and trench) from the transformer to the load will be provided by the member/developer. In those cases where the number of service cables will exceed the number of the termination points on the secondary terminal of the transformer, a tap box meeting PEC specifications and the latest version of ANSI C119.4 is to be provided by the member/developer. The tap box shall be lockable. Doors on both sides are preferred. The member/developer will provide the service from the transformer, to the tap box, to the load.

With agreement between PEC and the member/developer, PEC can provide the cable from the transformer to the tap box at the member/developer's expense. The number of cables from the transformer to the tap box shall not exceed the number of termination points on the secondary terminal of the transformer. The tap box enclosure shall be grounded by the member/developer in accordance with applicable codes. *Tap boxes meeting all required specifications that are produced by manufacturers and/or consist of part numbers not listed above may be provided by the member/developer **with PEC approval.**



DEVELOPER SHALL PROVIDE DITCH, CONDUIT, GROUNDING CONDUCTOR, GROUND ROD, AND SECONDARY CABLE. PEC CAN PROVIDE CABLE AT MEMBER/DEVELOPER EXPENSE. CABLE EXPENSE IS NOT PART OF CIAC ALLOWANCE.

REFER TO DRAWINGS 500-100 AND 510-009 FOR CONDUIT AND TRENCHING SPECIFICATIONS.

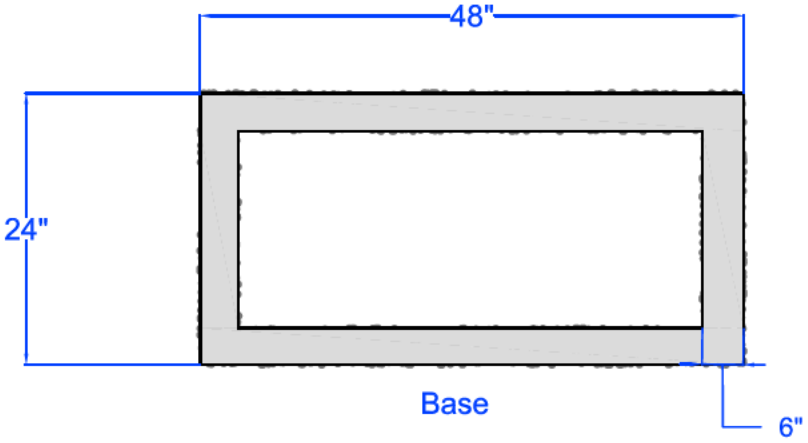


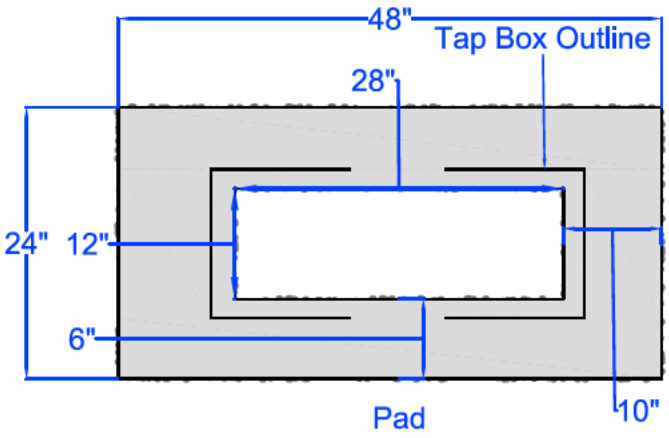
REV	B	DATE	1/15/2025	REVISION	UPDATED HUBBELL/CMC UP TO 500 kcmil 21-POSITION	BY	AMJ	CHK	SSS	APR	MMG

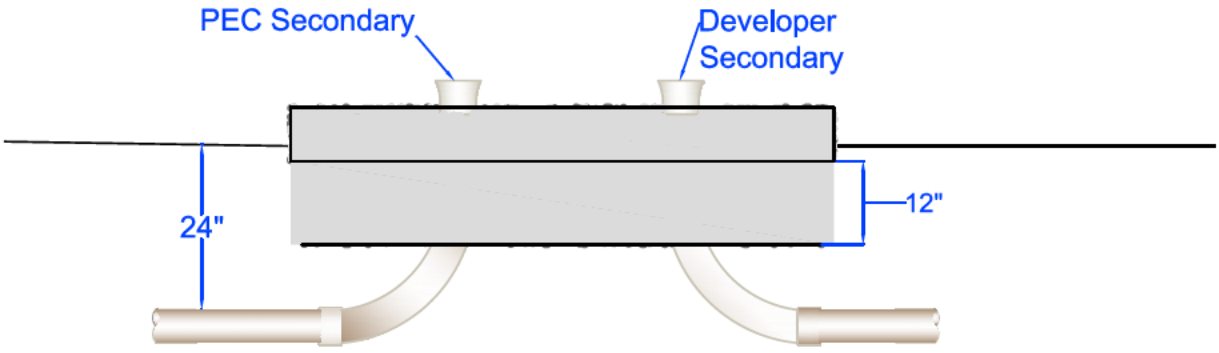
UNDERGROUND INSTALLATION SPECIFICATIONS

TAP BOX

drawn:	approved:	date:	550-021
AMJ	MMG	1/15/2025	







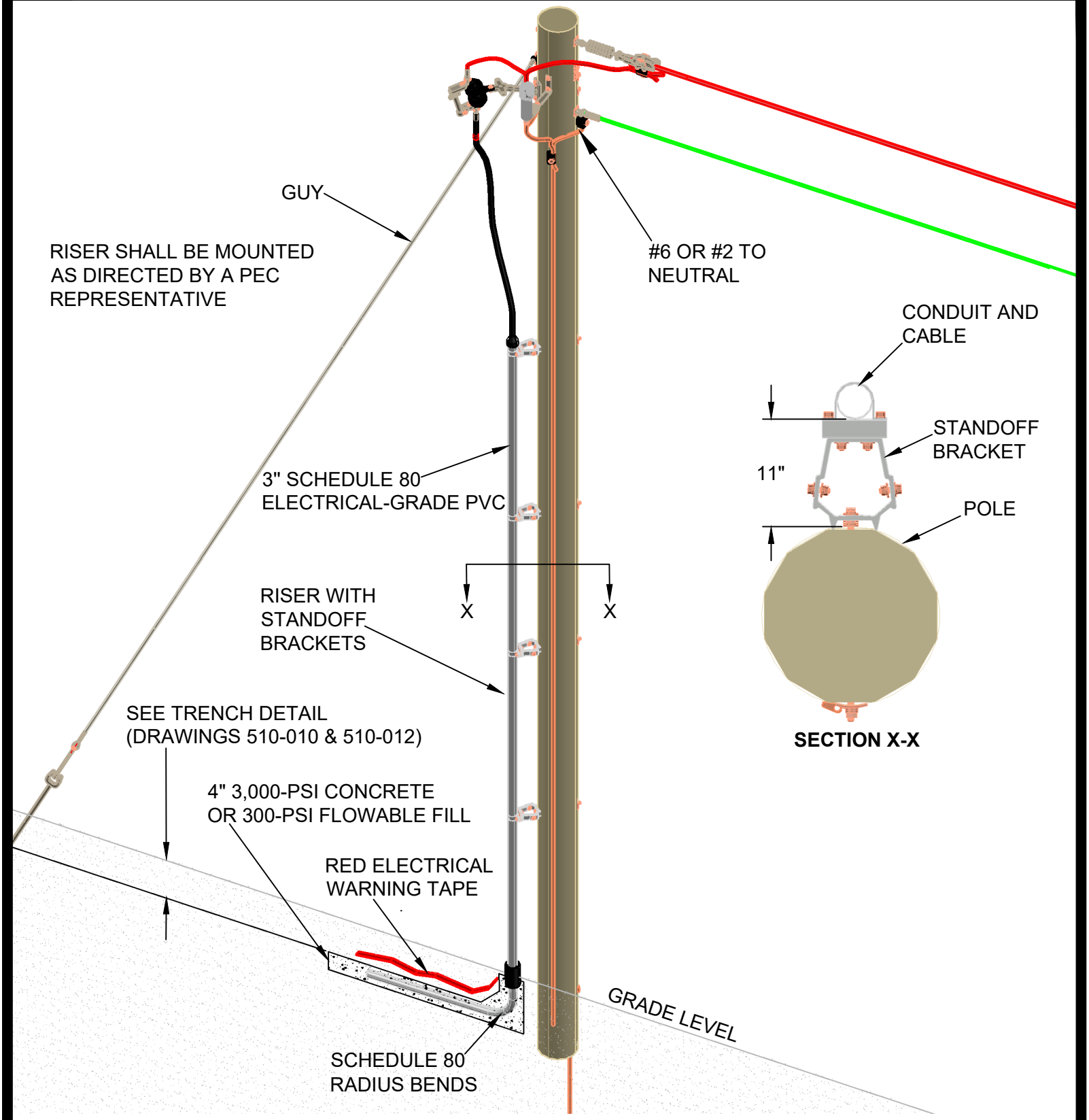
Side View

Pad to extend 4" above grade and 1½" below grade.
Number of Developer Secondaries to be determined by electrician.

PEDERNALES ELECTRIC. COOPERATIVE, INC.

Tap Box Pad

drawn:	approved	date:	
REB	MJB	July 2, 2015	550-022-0702



SECTION X-X

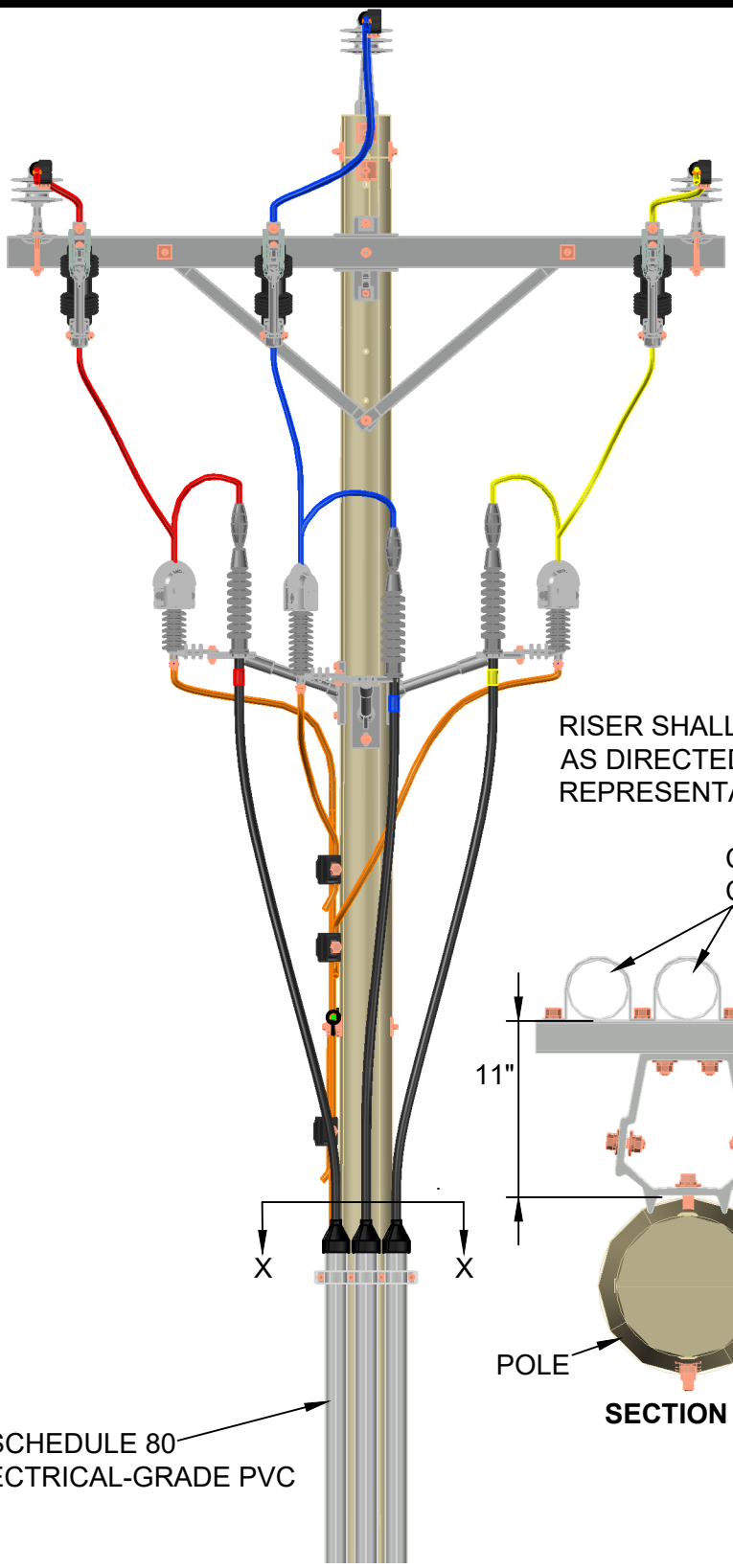
NESC Rule 217A2c: Standoff brackets on supporting structures shall be arranged so that there is not less than 8 ft. (2.45 m) between either: (1) The lowest bracket and ground or other permanently installed accessible surface, or (2) the two lowest brackets. Exception: This rule does not apply where supporting structures are isolated.

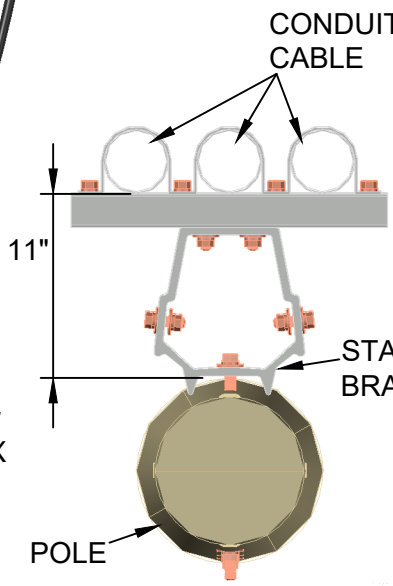
REV	B	DATE	11/13/2024	REVISION	SECTION X-X ENLARGED FOR CLARITY, 11" DIM.	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

1Ø RISER POLE USING STANDOFF BRACKETS

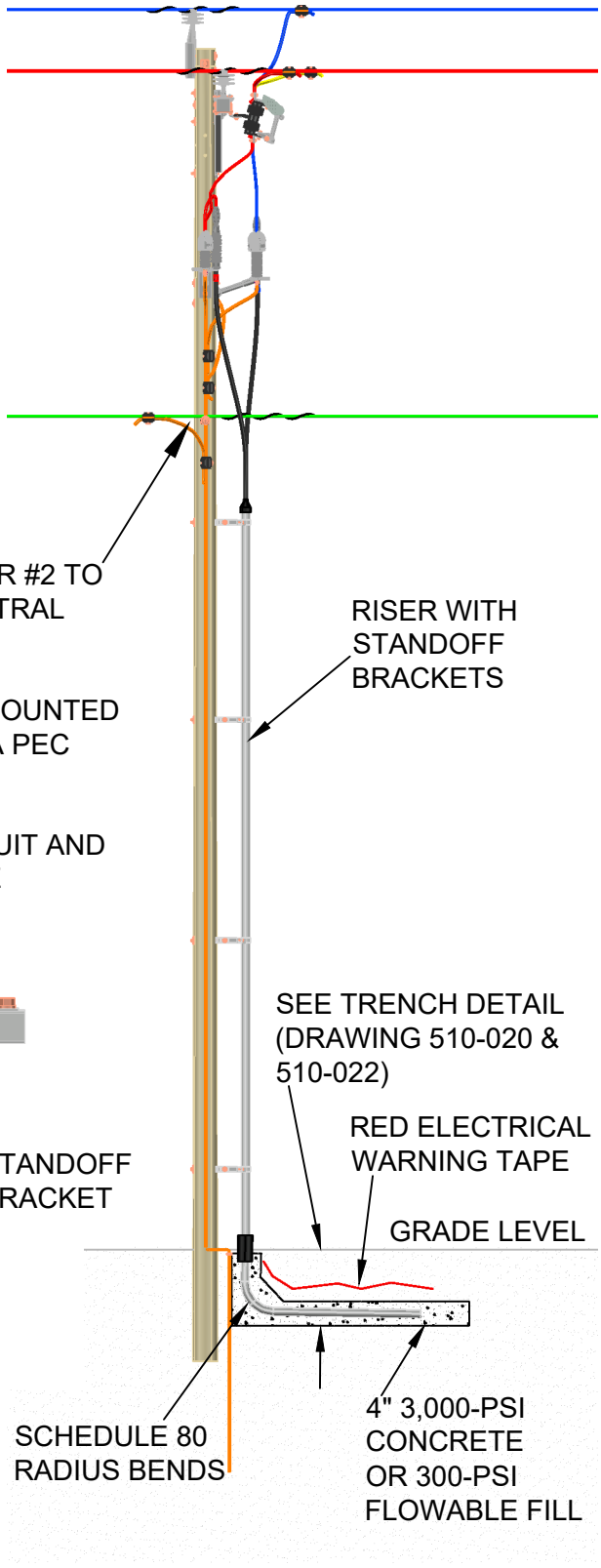
drawn:	approved:	date:	560-015
AMJ	MMG	11/13/2024	





SECTION X-X

RISER SHALL BE MOUNTED
AS DIRECTED BY A PEC
REPRESENTATIVE



NESC Rule 217A2c: Standoff brackets on supporting structures shall be arranged so that there is not less than 8 ft. (2.45 m) between either: (1) The lowest bracket and ground or other permanently installed accessible surface, or (2) the two lowest brackets. Exception: This rule does not apply where supporting structures are isolated.

REV	B	DATE	11/13/2024	REVISION	SECTION X-X ENLARGED FOR CLARITY, 11" DIM.	BY	AMJ	CHK	SSS	APR	MMG

UNDERGROUND
INSTALLATION
SPECIFICATIONS

3Ø RISER POLE
USING STANDOFF BRACKETS

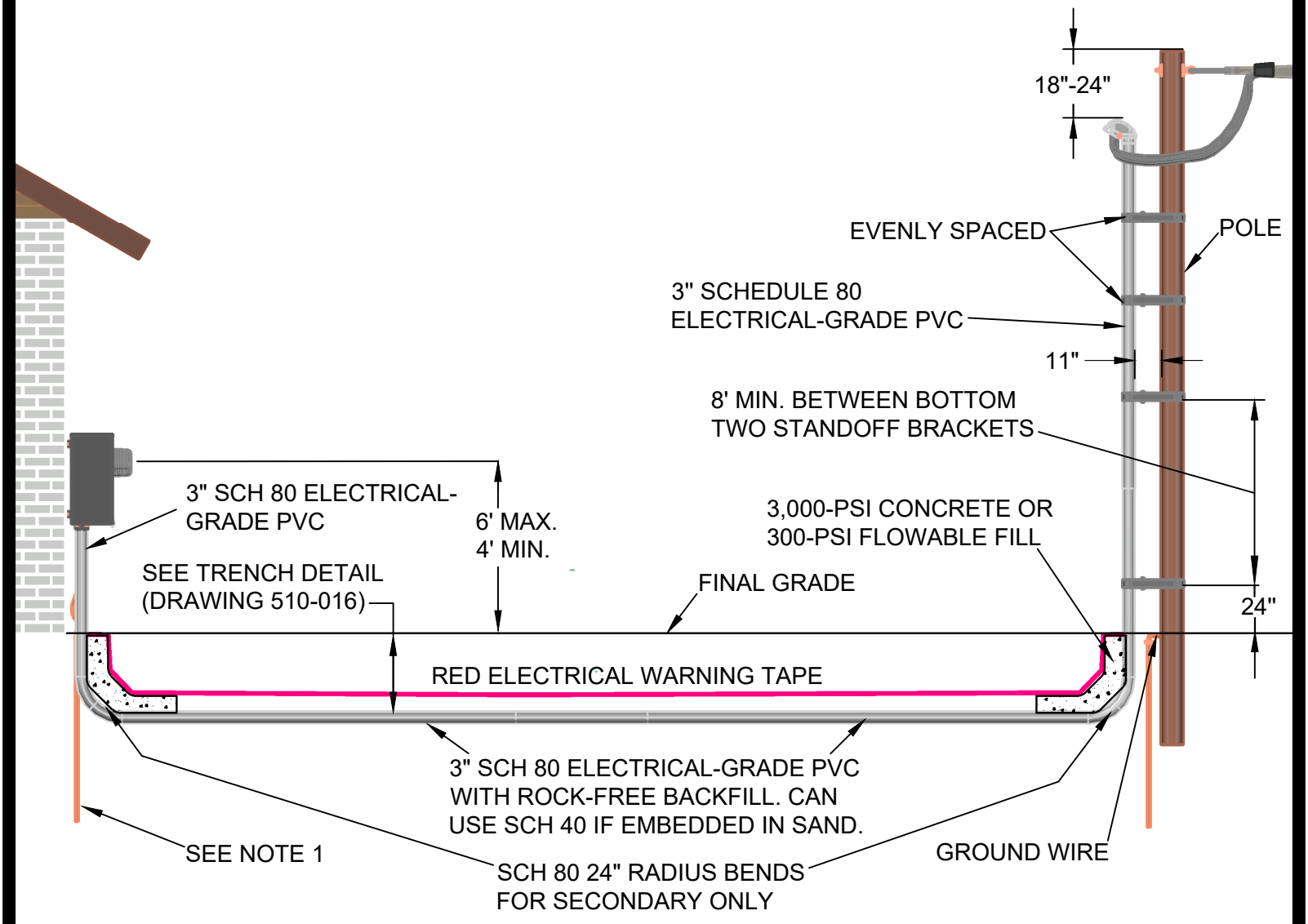
drawn:	approved:	date:	560-025
AMJ	MMG	11/13/2024	

For 30' or 35' pole, install 4 standoff brackets: First at 2' above ground, second at 10' above ground, and remaining 2 evenly spaced above second standoff.

NESC Rule 217A2c: Standoff brackets on supporting structures shall be arranged so that there is not less than 8 ft. (2.45 m) between either: (1) The lowest bracket and ground or other permanently installed accessible surface, or (2) The two lowest brackets. *Exception:* This rule does not apply where supporting structures are isolated.

NOTES TO MEMBERS:

1. Select and install ground rod according to meter loop specifications.
2. Standoff brackets, straps, and secondary wire shall be supplied by PEC. The member shall supply all conduit. PEC will install the riser.



REV	F	DATE	6/9/2025	REVISION	REVISE TITLE & MIN. METER HEIGHT	BY	SSS	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

SINGLE-PHASE SECONDARY RISER WITH STANDOFFS

drawn:	approved:	date:	560-050
SSS	MMG	6/9/2025	

For 30' or 35' pole, install 4 standoff brackets: First at 2' above ground, second at 10' above ground, and remaining 2 evenly spaced above second standoff.

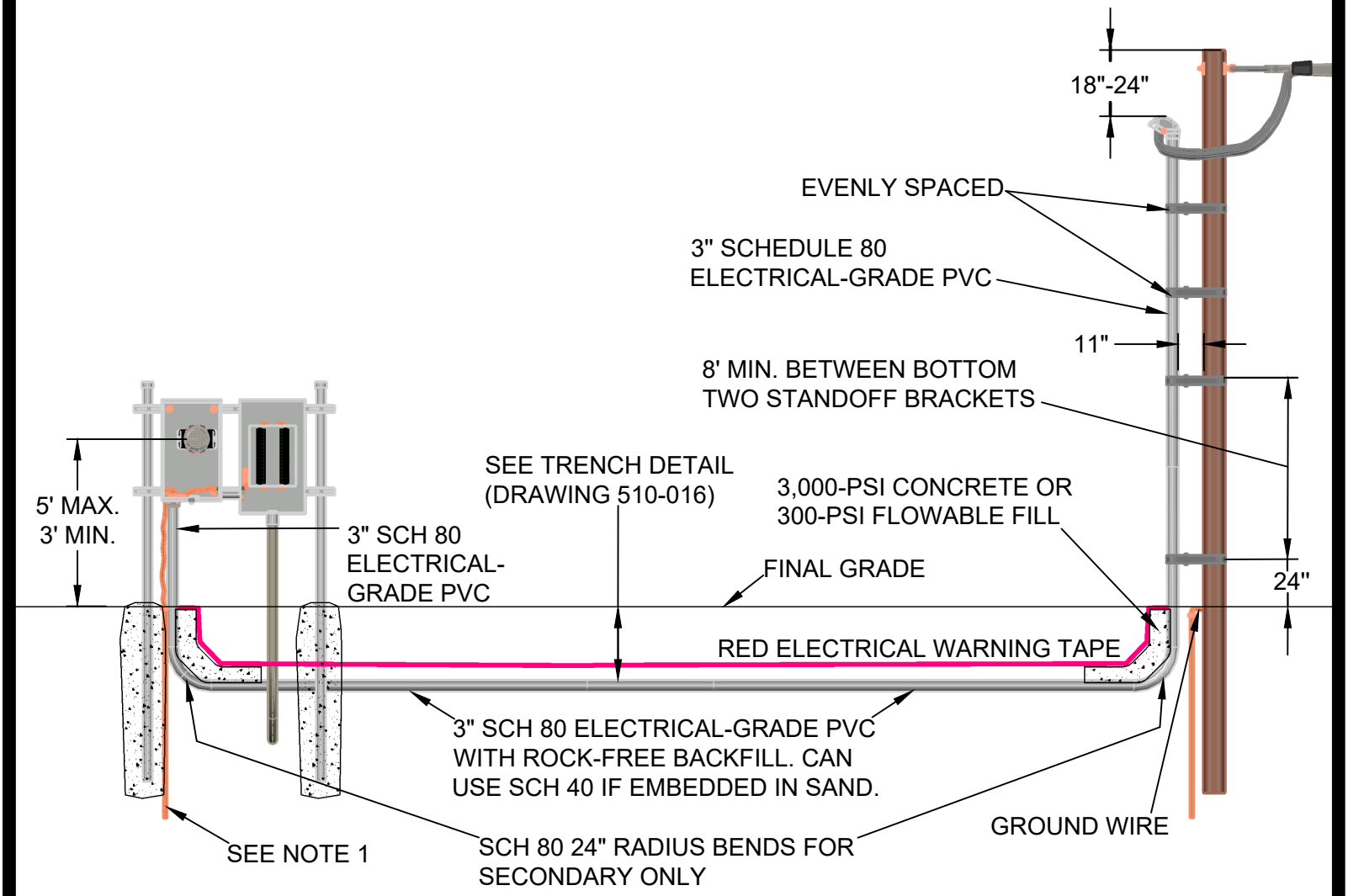
NESC RULE 217A2c: Standoff brackets on supporting structures shall be arranged so that there is not less than 8 ft. (2.45 m) between either: (1) The lowest bracket and ground or other permanently installed accessible surface, or (2) The two lowest brackets. *Exception:* This rule does not apply where supporting structures are isolated.

URD FREESTANDING RACK:

- Incoming conduit must attach to the side of the meter socket opposite from the disconnect.
- See 500-100 for member's responsibilities.

NOTES TO MEMBERS:

1. Select and install ground rod according to meter loop specifications.
2. Standoff brackets, straps, and secondary wire shall be supplied by PEC. The member shall supply all conduit. PEC will install the riser.



REV	F	DATE	6/9/2025	REVISION	REVISE TITLE & METER HEIGHTS	BY	SSS	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

SINGLE-PHASE SECONDARY RISER WITH STANDOFFS TO A METER RACK

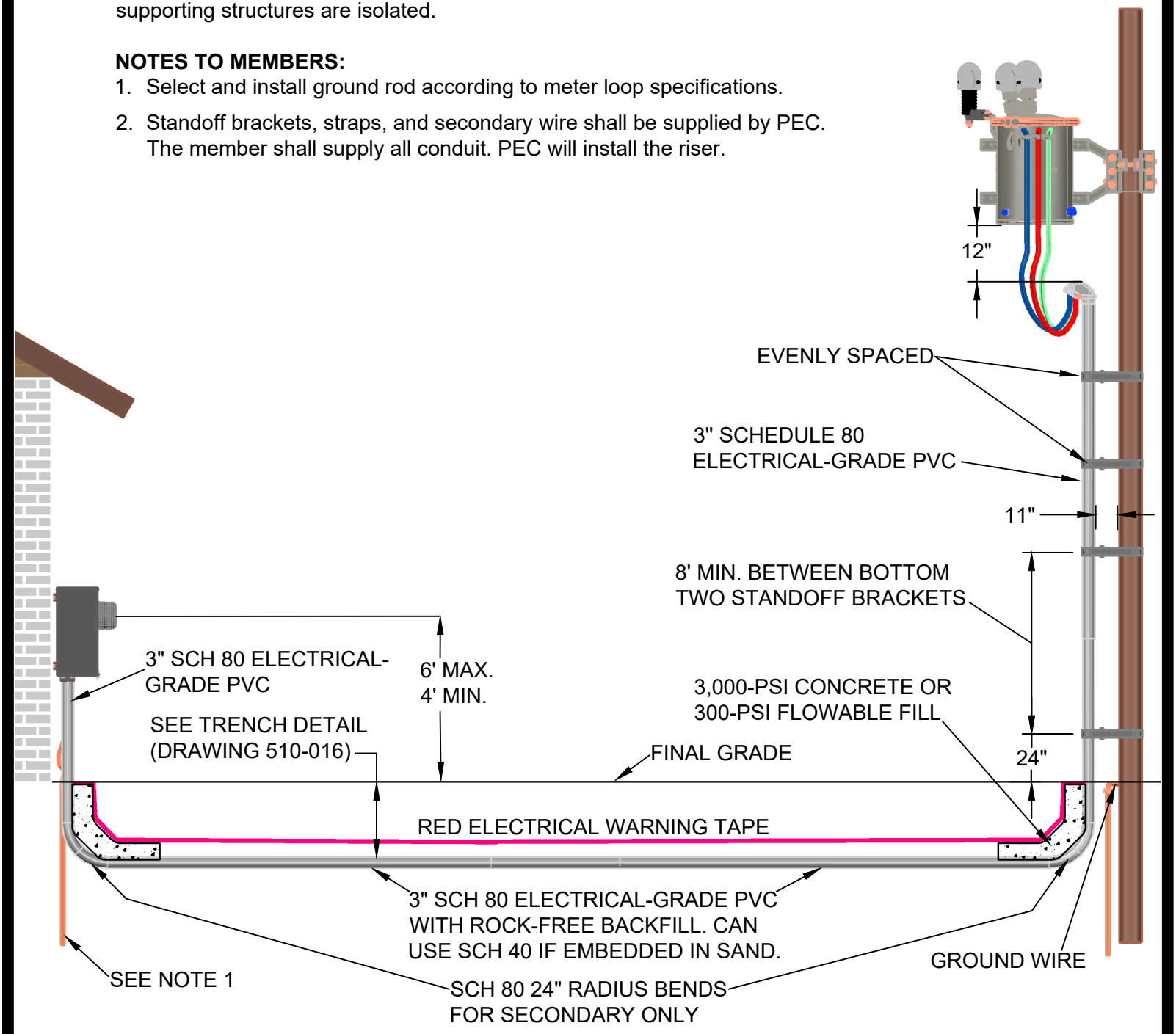
drawn:	approved:	date:	560-051
SSS	MMG	6/9/2025	

For 30' or 35' pole, install 4 standoff brackets: First at 2' above ground, second at 10' above ground, and remaining 2 evenly spaced above second standoff.

NESC Rule 217A2c: Standoff brackets on supporting structures shall be arranged so that there is not less than 8 ft. (2.45 m) between either: (1) The lowest bracket and ground or other permanently installed accessible surface, or (2) The two lowest brackets. *Exception:* This rule does not apply where supporting structures are isolated.

NOTES TO MEMBERS:

1. Select and install ground rod according to meter loop specifications.
2. Standoff brackets, straps, and secondary wire shall be supplied by PEC. The member shall supply all conduit. PEC will install the riser.



REV	G	DATE	6/9/2025	REVISION	REVISE TITLE & METER HEIGHT MIN.	BY	SSS	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

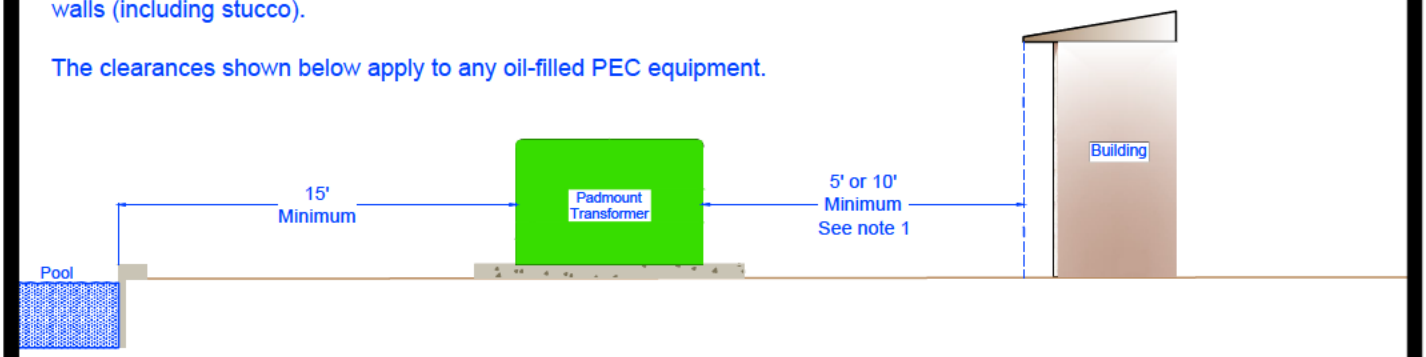
SINGLE-PHASE SECONDARY RISER WITH STANDOFFS FROM OVERHEAD TRANSFORMER

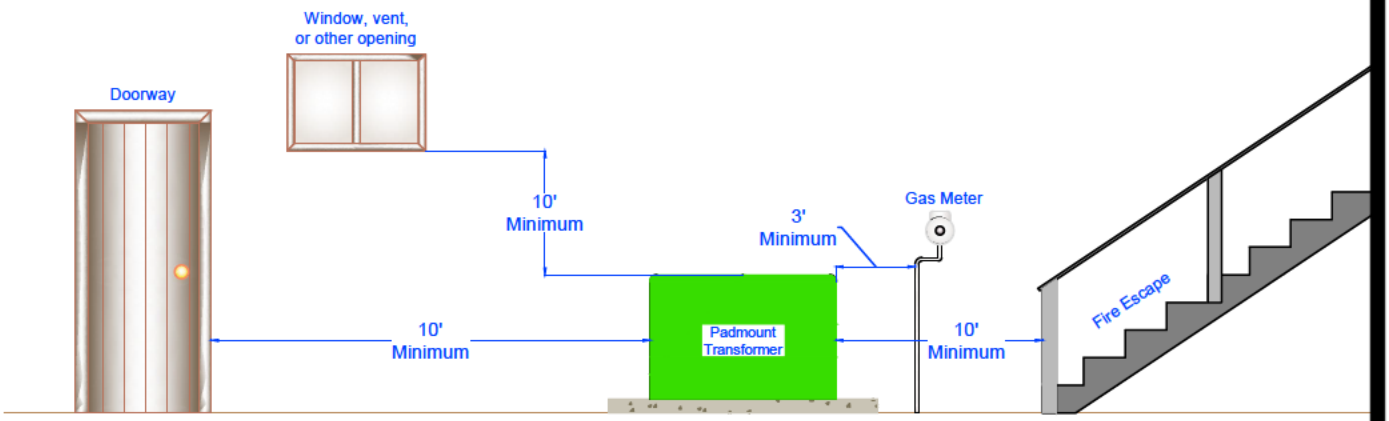
drawn:	approved:	date:	560-052
SSS	MMG	6/9/2025	

Note 1: Clearance from padmount transformers to structures measured from the nearest metal portion of the transformer, to the structure or any overhang.

The clearance from a building is five feet if the building has non-combustible walls (brick, concrete, steel, or stone), ten feet if the building has combustible walls (including stucco).

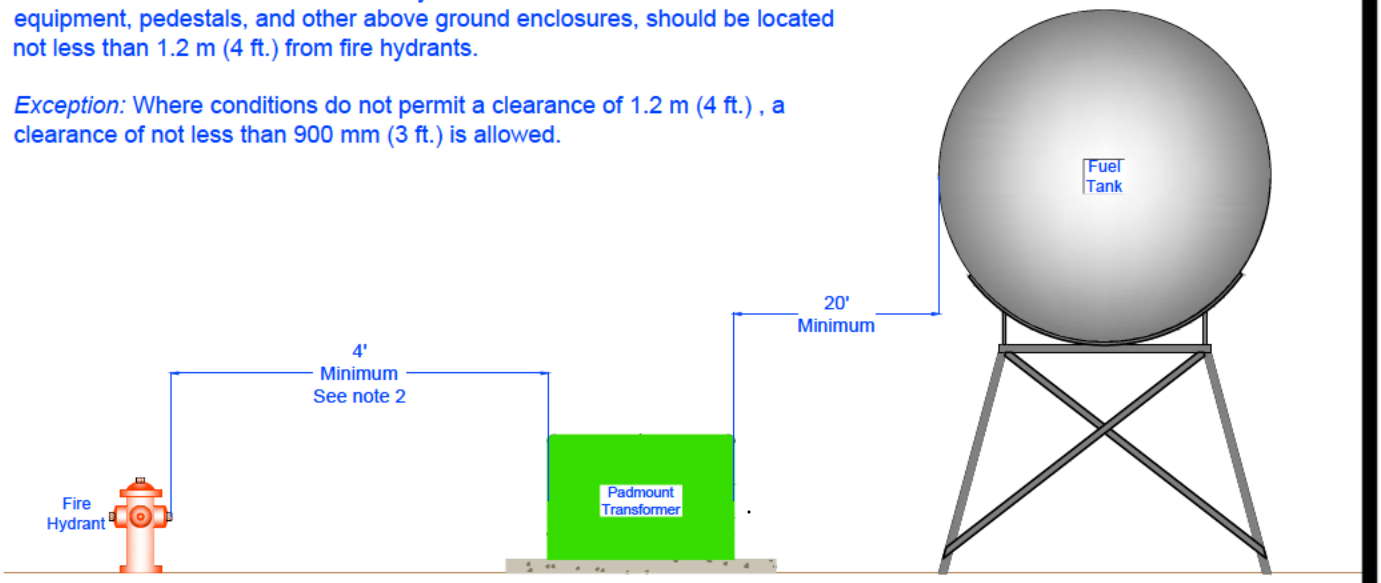
The clearances shown below apply to any oil-filled PEC equipment.





Note 2: Per the National Electric Safety Code rule 380D Pad mounted equipment, pedestals, and other above ground enclosures, should be located not less than 1.2 m (4 ft.) from fire hydrants.

Exception: Where conditions do not permit a clearance of 1.2 m (4 ft.) , a clearance of not less than 900 mm (3 ft.) is allowed.



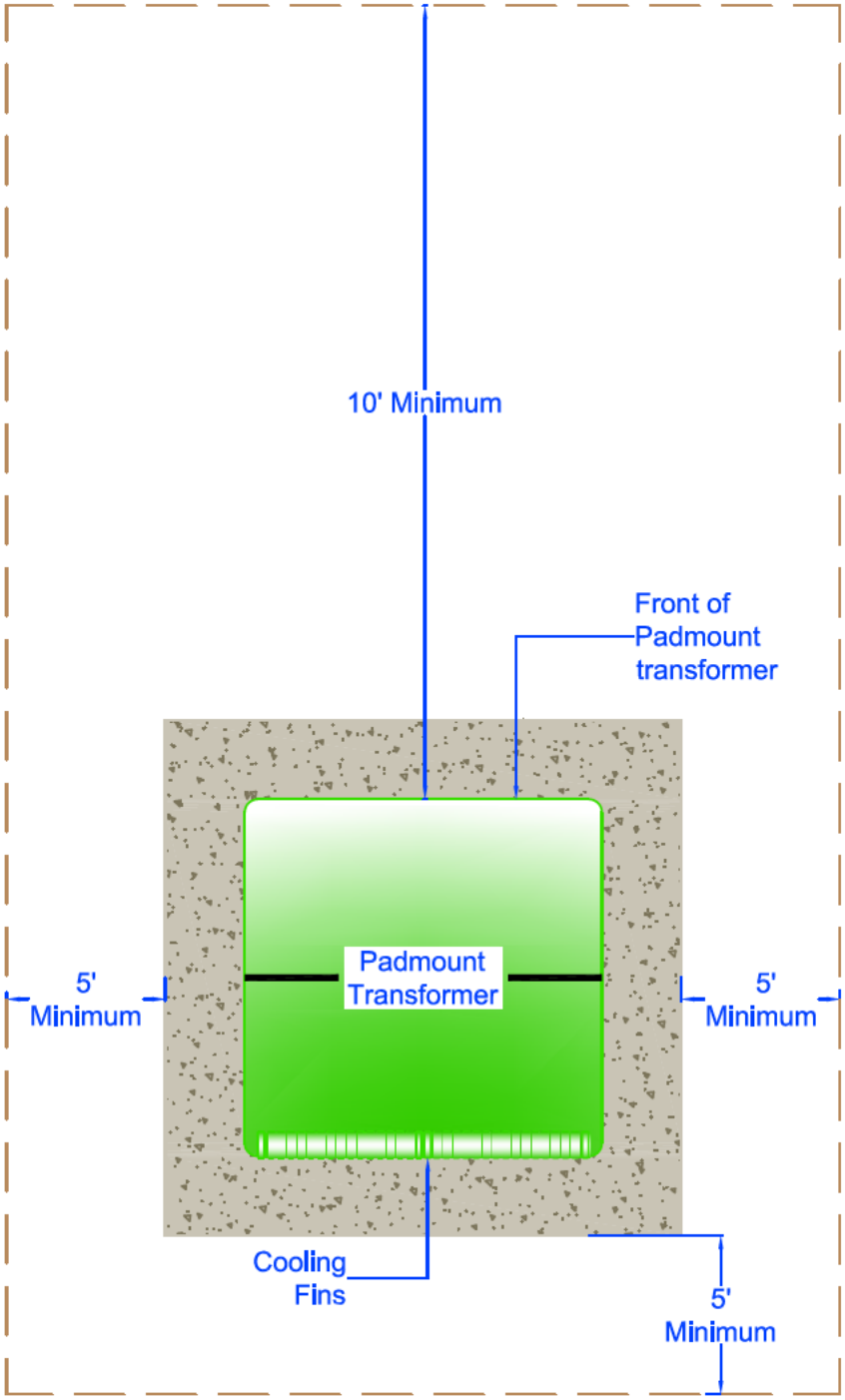
PEDERNALES ELECTRIC COOPERATIVE, INC.

URD DEVELOPER'S SPECIFICATIONS

Safety Clearances around Padmount Transformers

drawn:	approved	date:	drawing number:
JBS	MJB	March 11, 2015	570-010-0911

A minimum clearance of ten feet of clear, level, unobstructed working space is required in front of a padmount transformer, to allow use of hot sticks. OSHA Rule 1910.303(h)(5)(V1)



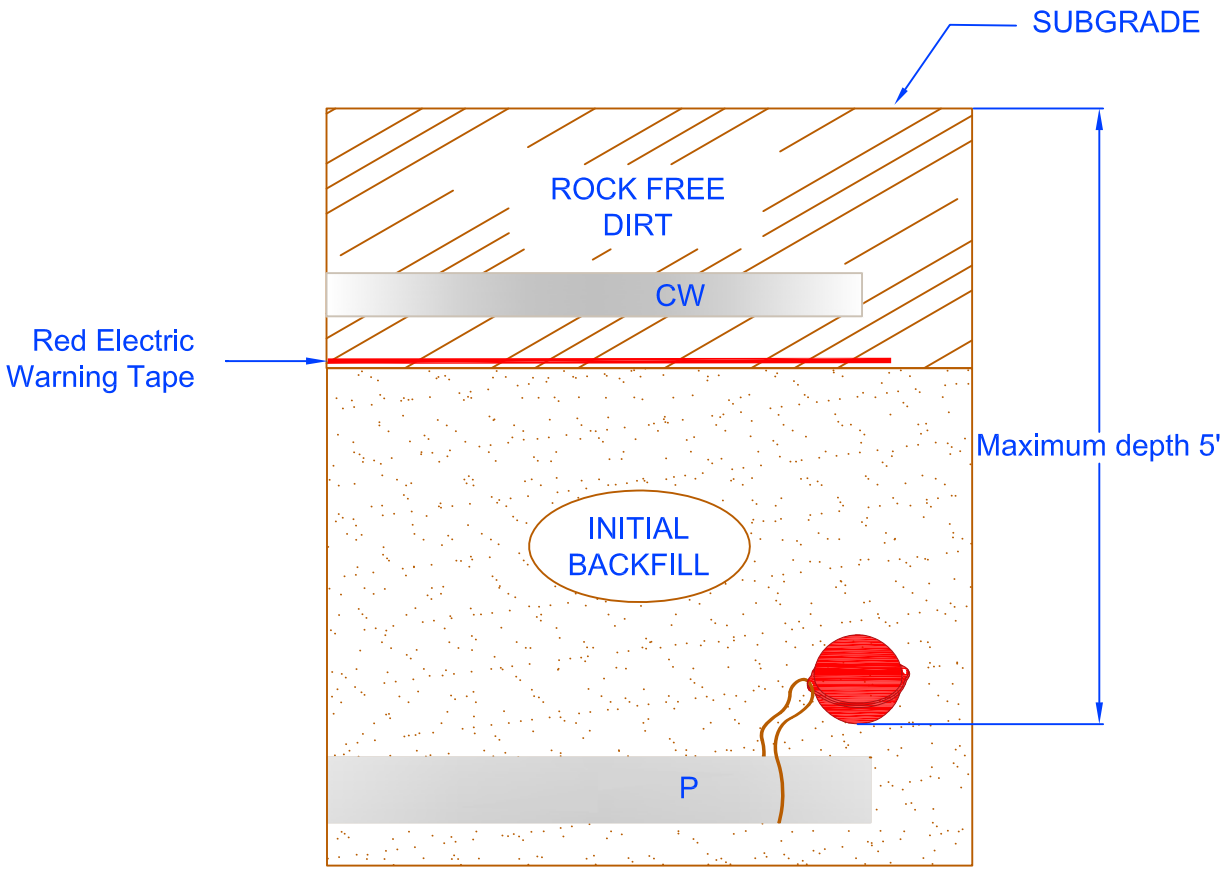
The clearances shown above applies to all PEC padmounted electrical equipment over 600 volts PEC equipment.

PEDERNALES ELECTRIC COOPERATIVE, INC.

URD DEVELOPER'S SPECIFICATIONS

Working Clearances around Padmount Transformers

drawn:	approved	date:	drawing number:
JBS	MJB	February 28, 2013	570-015-0911



Model Number # 1402-XR

Stock # 80611161144

NOTES:

1) 3M Electronic Marking System Extended Range Ball Marker's are required at locations deemed necessary by PEC.

2) PEC inspector will deliver marker balls to developer's contractor for installation.

3) Ball markers must be tied to the conduit ends using the tie down tabs provided.

4) The XR Ball Marker cannot reliably re-radiate the locator's signal at a depth greater than 5 feet, this is the maximum allowable distance between ball marker and subgrade.

5) Hand fill at least 6 inches of soil over the marker to prevent movement or damage during backfill.

Pedernales Electric Cooperative, Inc.

PEDERNALES ELECTRIC COOPERATIVE, INC.

URD DEVELOPER'S SPECIFICATIONS

3M Electronic Marking System Extended Range Ball Marker

drawn:	approved	date:	drawing number:
DBS	MJB	July 18, 2016	580-010-0911